

# COAL AGE

SEPTEMBER, 1959

Better Communication . . p 74

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PRICE \$1



Maintenance Ideas . . . p 82

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tegral transfer case turns engine power into steady pulling ability for year after year of dependable, repair-free life.

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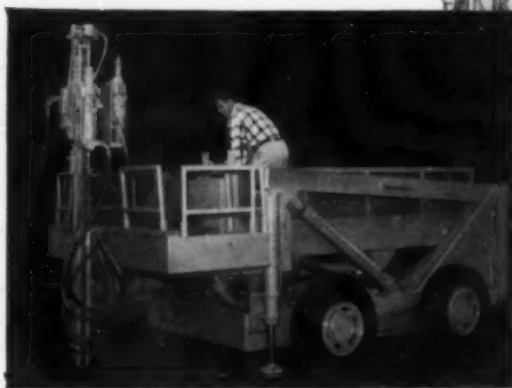
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RIGHT—I-R Roof-Bolting Jumbo with elevator raised to upper position for working in a 14-foot seam.

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accomplishes this with almost no degradation whatever.

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## This Month in SEPTEMBER 1959

# COAL AGE

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### ► Management Skill

#### How to Improve Communications . . . . . p 74

N. Richard Diller, Pennsylvania State University,  
General Extension, Ogontz Center, Pa.

What good communication is and how company progress depends upon it. With cooperation as the ultimate aim the immediate aim is to convey meaningful ideas and information. Better listening is vital in reaching the understanding of the man's mental processes necessary in making communication effective. Failure to achieve cooperation means lack of communication. Ways and means of attaining it are:

Establishing the proper climate, including avoiding the pitfalls that may be present.

Making sure that communication is tri-directional—"upward," "downward" and "across" to make sure of getting "through."

**Rounder-Outer**—"The Rumor: Detecting and Derailing."

### ► Stripping

#### Dredge Stripping at Westfield . . . . . p 81

Peat and sand at strip site in Fifeshire, Scotland, result in decision to use suction dredge for removal

and uncovering of four coal seams with reserves of 25 million tons, or 20 yr of production at proposed rate. Output will supply a Lurgi gas plant, with excess for sale on the open market. Shipped in from Belgium and reassembled at the site the dredge averages about 900 cu yd of solids per hour or 90,000 cu yd per week. Dredged material is piped to twin drainage and storage basins formed by earthen dikes.

**And in Addition**—Details on what goes into a dredge and how it operates.

### ► Maintenance Ideas

#### Low-Cost Assembly-Line Cable Splicing . . . p 82

Cable-repair shop in Washington, Pa., which serves mines within a 100-mi radius, reveals methods of testing cables and tells how neoprene and plastic cables are spliced.

#### Other features:

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### ► Preparation

#### Upgrading Fragile Coal to Premium Metallurgical Product . . . . . p 94

Employing gravity material flow as much as possible and gentle handling within the preparation units, Island



Poor lubricants can cause down time. So can *good* lubricants, unsuited to the equipment or the operating conditions. Does this sound complicated? You can simplify it easily. Do as hundreds of mine operators do—call in the Amoco lubrication engineer. He knows all kinds of deep and strip mining equipment by make and model . . . knows the various operating conditions . . . knows just which of Amoco's complete line of quality tested lubricants to use. Let the Amoco man survey your needs without charge . . . show the way to better performance at lower costs. Contact your nearest Amoco office, or American Oil Company, 555 Fifth Avenue, New York 17, N. Y.



**AMOCO LUBRICANTS**  
*For Mine Machinery*

When you want performance, you want Amoco.

## This Month in Coal Age—Cont'd

Creek Coal Co. keeps degradation to a minimum at its Wyoming fine-coal plant. Typical screen analyses of raw and fine coals show that maximum degradation is only 4.28% and is in the  $\frac{1}{4}\times\frac{1}{8}$  size. Raw coal flows to the fine-coal plant by belt conveyor, is washed on twin-deck tables, dewatered on the largest horizontal rotary filter in the coal industry, dried in thermal units and then reconveyed to the loading point in the coarse-coal plant.

**Of Prime Interest**—Description of horizontal filter; screen analyses of raw coal, filter feeds and end product; plant flow sheet.

## ► Deep Mining

### Three Units Feed One Loading Point

*At Ditney Hill* ..... p 100

One entry-development unit and two room-panel units (conventional equipment) feed coal to a belt-conveyor system that converges at a single mine-car loading point, thus increasing overall efficiency of operations. Ventilation system is improved to place track and belt conveyor in separate currents of intake air. Rockdusting is done in cycle, using hydraulic-powered slurry distributors mounted on universal cutting machines.

**Employee-Relations Idea**—Description of Ingle Coal Corp.'s Annual Barbecue, held on April 1, an important holiday on the union's calendar.



## ► Stripping

### Profitable Thin-Coal Stripping With

*Bulldozer and Dragline* ..... p 106

With a coal thickness of 36 in Bowie Coal Co., Clintonville, Pa., uses bulldozer and 6-yd dragline to remove as much as 60 ft of overburden. Bulldozer pushes loose top material into pit and sandstone is drilled down to shale over coal by contractor ( $\frac{6}{4}$ -in holes on 15-ft squares) and shot with ammonium nitrate, using 0, 2, 4 and 6 delays. Dragline with 120-ft boom uncovers 60- to 70-ft strip of coal and accounts for 14,000 tons per month, two shifts per day. Loading into 15-ton trucks is handled by  $2\frac{1}{2}$ -yd shovels. All coal is crushed to 2x0

# This Month in COAL

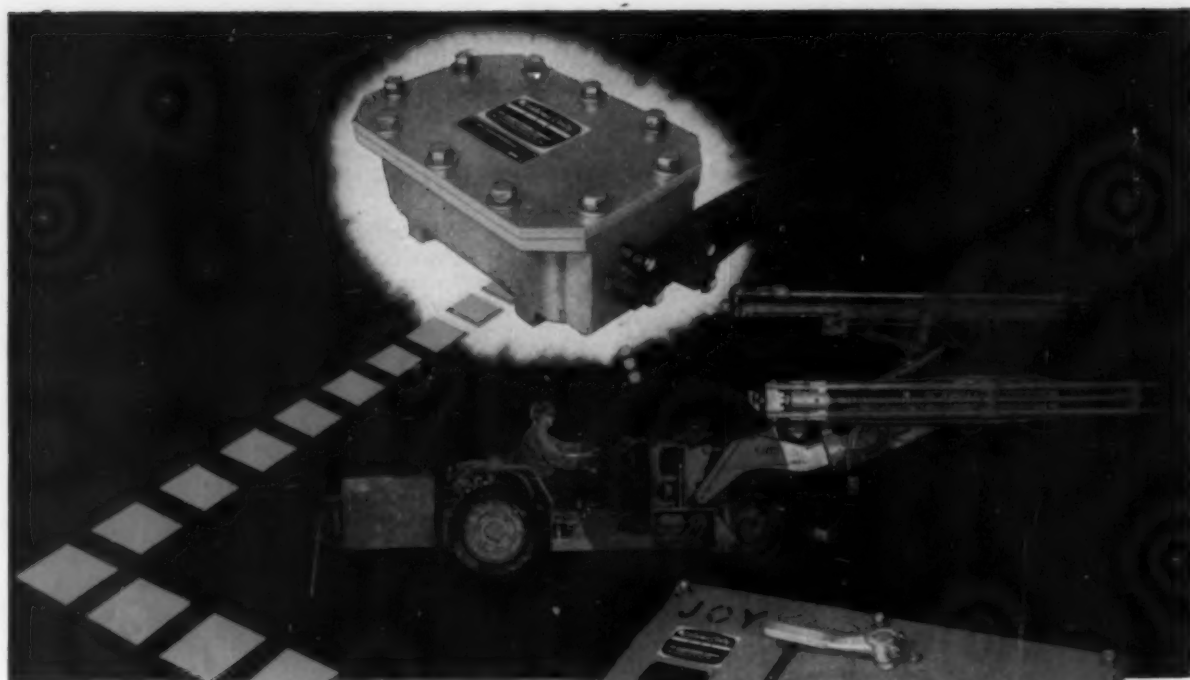
**GOOD FOURTH**—A reasonably good fourth quarter 1959 is in the cards for bituminous coal, though the steel strike and the falloff in exports, which still continues, will cut tonnage for the year an appreciable amount under what it otherwise would have been. But bituminous should run better than 9 million a week in the last 3 mo, and might, on occasion, bounce higher. Anthracite continues to demonstrate good staying power, and still could wind up almost if not equal to 1958 with a break in the weather.

**LESS COMPETITIVE PRESSURE?**—Whether it will bounce back more strongly as time goes on is still a big question but the rate of gain for distillate oil demand has been markedly less than in recent years. Residual, however, as a result of the desperate scramble to beat the allocation deadline, is away up in 1959—though, if the government continues to keep the controls clamped on, 1960 may offer a much different picture. The gas gain also has been less in 1959 than in most other recent years, though the boom in industrial use continues. But perhaps one can assume that there has been some easing of the competitive pressure.

**ADDED COAL POWER**—Though competition has gained and undoubtedly will continue to do so for some time, the step-up in coal's competitive power is letting it win more and more battles. A striking pickup in bituminous coal-handling equipment sales, and in automatic anthracite burners, are among the evidences of this added power. The market-promotion job coal is doing is one answer. Others are continued stress on the development of new products (the Gough automatic stoker from Canada, being tested by the Norfolk & Western for example) and on new ways of getting consumers to sign up. One is the promotion of the idea of leasing coal-burning facilities, which could help public-school boards and other public bodies in particular. When the year-end reports are in coal will have saved or gained several million more tons than in 1958.

**MARGINS OUTLOOK**—Midyear reports of companies making public their financial reports show several with incomes down and a few with losses—some fairly heavy. But for organizations producing around one-fifth of the total industry tonnage, the return per net ton after all taxes and charges is running 25 to 35c per ton and up to, in one instance, 69c. The steel strike undoubtedly will cut margins in the third quarter but a rebound should occur in the fourth. This would leave 1959, all things considered, a fair year for margins for most companies in spite of wage increases and price concessions.

**HOLDOUT REPORT**—Though their ranks are thinner the approach to the last quarter of 1959 finds a number of companies, particularly in eastern Kentucky, holding out against signing the latest wage agreement. What the eventual picture will be is still a matter of guesstimate, but a boom in coal demand could convert a fair number more. But it still appears that the region, also characterized by a rise in the number of mines in the under 50,000-tons-a-year class, will have a substantial holdout percentage for an indefinite period.



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The JOY — ELECTRONIC SENTRY offers a degree of protection never before possible. An ever-present monitoring signal is interrupted when trouble occurs and an automatic circuit breaker acts instantaneously to remove power from the complete machine and trailing cable. There is no destructive arcing due to heavy fault currents as in the case of operation with a ground wire. There is no false sense of security as the Electronic Sentry must fail safe!

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CO-493

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## This Month in Coal Age—Cont'd

before trucking to users or railroad.

**Operating Flywheel**—How Bowie stocks mine-run and prepared coal in offpeak summer season.

### ► Services, Deep Mining

#### New Portal: Higher TPM, Better

Ventilation ..... p 110

New 540-ft-deep shaft (11x22 ft, two compartments) equipped with pushbutton elevator is supplemented by 50x110-ft portal building and new 8-ft fan at Lancashire No. 15 mine of Barnes & Tucker. Shaft headframe was prefabricated by welding, using material from old tippie. Enclosed passageway on surface and elevated landing underground were provided for the protection of men. Including offices and meeting rooms and a small supply room, the portal building accommodates 265 men on two production shifts and a partial third shift.

**Benefits**—A 20% increase in output per man-shift, improved ventilation and a 3½-mi cut in travel distance.

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## This Month in Mining Practice

**FUTURE WORKHORSES**—Machines, automaticity and control from a distance are among the tools that coal is calling on for further labor savings, as well as other benefits. Machines date way back and automatic operation of such installations as substations a few decades. Remote checking or monitoring and remote control are relatively new developments. The most-spectacular application is remote control of continuous miners but new simplified equipment permits checking on whether substations, fans or pumps are operating; permits starting them or stopping them from a distance; and also, among other things, permits automatic shutoff. Rapid increase in the use of such systems is the word for the future.

**FLYING COAL MEN**—Indications are that there will be a number of helicopters bought by coal-mining companies in the near future following the initial satisfactory experience of one stripper. Coal already employs standard aircraft and a number of the newer short takeoff and landing units also. A possibility for the future is a new development of the autogyro, which provides many of the advantages of both the plane and the helicopter. The future in the case of the autogyro in question, or others along the same line, probably means a year or more.

**EFFICIENT TRANSFER**—Since the shuttle car, though not as popular as it was, still is going to be around in sizeable numbers for quite awhile, the interest in transfer equipment continues keen. Though the problem looks simple it really is not, especially in low coal where there is a tendency for discharge time to rise. A good transfer setup, involving the proper type of feeder between car and mine car or belt, can cut quite a few seconds off trip time and increase loader or miner tonnage an appreciable amount—frequently enough to pay for the feeder in a year or two.

**HOW GOOD THE LAGOON?**—Some dissatisfaction with the usual sludge pond or lagoon is being expressed by state and other agencies concerned with minimizing stream pollution—and also with disposal methods for coarse refuse. The pond does constitute a repository but often, they insist, is not really an effective agent in keeping even solids out of waterways, let alone the acid with which they are increasingly concerned. Since the pressure is likely to be on soon the experts are recommending a close look at pond operation and coarse-refuse handling.

**SHOOTING ALTERNATIVES**—The original alternative to shooting in loading strip coal was to dig it with the shovel—if not too hard. Now the big hydraulically controlled ripper is taking over more and more of the job. And there is interest in other ideas too. One is the pinning machine, originally for thin coal commanding a high price but later also for thicker seam coal—the latter in some instances because it will yield the degree of fragmentation desired at a lower cost than shooting. But whatever its form the mechanical coal breaker will continue to account for more and more coal in stripping.



CONVEYOR BELTS



## 20,000 tons of washed coal per day adds up to 40,000,000 tons

This is the minimum tonnage expected to be hauled in an estimated 12-year life by the main "U. S." belt on this conveyor system.

The system is installed in U. S. Steel's Robena Coal Mine, Uniontown, Pa. Robena is actually three mines, all serviced by the same preparation plant. This combination constitutes one of the largest coal-producing units in the nation.

A single U. S. Rubber Slope Belt (installed 1953) conveys all the washed coal, amounting to over 20,000 tons a day. A second "U. S." Belt (installed in 1951) conveys coal to the blending bins.

It's top year-in and year-out performance like this that makes U.S. Rubber the world's largest producer of belts.

The belts in Robena were designed and installed with U.S. Rubber's COORDINATED ENGINEERING... the engineers of the mine, the builders of the conveyor system, and the "U. S." Belting engineers all work in coordination to produce the most efficient and economical coal-handling system.

• • •

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# The Coal Commentator

## Up for Storage

A field check of mine-storage capacity, practices and equipment for raw and prepared coal has recently been completed by *Coal Age* as a part of a special "Operating Guide" to be published in December.

Meantime, while urging you to make a mental or other note to watch for said Guide, your commentator can note what many already know or suspect: Storage of both raw and prepared sizes is increasing both in number of mines adopting the practice and in the capacity of the storage facilities being provided. In the latter area, single bins of 5,000 tons or more are being installed for prepared coal, while ground storages of 40,000 to 50,000 tons for sizes ready for shipment are not unusual.

Storage is almost a must where effective blending is desired. Storage of raw coal also is, among other things, a good means of reducing the effects of mine or plant stoppages even when blending is not the goal, while storage of prepared coal permits, along with other objectives, eliminating sacrifice sales of slow-moving sizes as well as making possible prompt, efficient service to truck customers.

## Still a Place

It is a good bet that as long as the small mines under 50,000 tons a year can maintain their position, which represents a considerable improvement over, say 10 yr ago, the output of hand-loaded bituminous probably will not go under 10%. In the second category of hand loading—onto conveyors—the 1957 proportion of 3.5% is scheduled for additional whittling, but not for complete elimination. For one reason or another, primarily natural conditions peculiar to certain operations, the hand-loaded conveyor, with a suitable mining system and a good face cycle, probably will continue to get the nod—though not as often—for a good many years.

The thing that will continue to cut into the field of the hand-loaded unit is the further development or modification of loading machines and miners, including auger and longwall units, for the seams at the lower end of the height scale. Some of what the picture will be in this area of coal mining already is visible, but here also is where one may possibly look for major innovations in equipment and methods, not only for mining but for transporting the coal afterwards, such as possibly, wet or dry pipelines. Meanwhile the hand-loaded conveyor and its self-loading brother will be doing a good job, though not as big a one, for a fair number of operators in bituminous, as well as in anthracite.

## Not Overoptimism

"Anthracite," "anthracite gray" and "anthracite plaid" have now joined the fashion parade as a result of featuring by Pomeroy's, the largest department store in Schuylkill County, Pennsylvania, with an assist from the Reading Anthracite Co. Consequently, dress colors now march along with souvenirs, jewelry and other decorative anthracite outlets.

The rush to steam and metallurgical coal still is not precisely headlong but is growing. Nevertheless coarse coal persists as a significant item in tonnage and in realization. Consequently, prevention of automatic equipment, which actually increased sales in six major Northeast cities—New York, Binghamton, Jersey City, Philadelphia, Baltimore and Newark—in the coal year ended last March 31. Both domestic and commercial units increased in sales in the cities and period in question.

And so for this year about the only difference between 1958 and 1959 represents the drop in exports. Another cold season this fall could leave anthracite looking right good, comparatively, for the year and give it a further opportunity to stabilize its position and possibly plan for an eventual upturn. The record indicates that this is not necessarily overoptimism.

## Preserving Structure

The rush to steam and metallurgical coal still is not precisely headlong but is growing. Nevertheless coarse coal persists as a significant item in tonnage and in realization. Consequently, preventing excessive degradation and shattering remains important—even with steam and metallurgical where excess ultrafines pose added problems in preparation and elsewhere along the line.

New ways of preserving coal structure and preventing excessive shattering are, for all practical purposes, nonexistent, though a relatively new one in stripping is the pinning machine. In a heavy-duty model with certain types of coal it can compete with drilling and shooting as a means of preparing the seam for loading. Rubber-tired tractors and other equipment for cleanup and other purposes can make a significant difference in yield of coarse fractions, in addition to cushioning against overburden shooting and other well-accepted methods. Underground, the means of maintaining coarse-fraction yield include sharp bits, air and carbon-dioxide breaking, and proper transfer and handling of mine-run.

Few steps can achieve major results by themselves, but several in combination often can—often also yielding real benefits in realization, especially where a market for coarse coal exists.

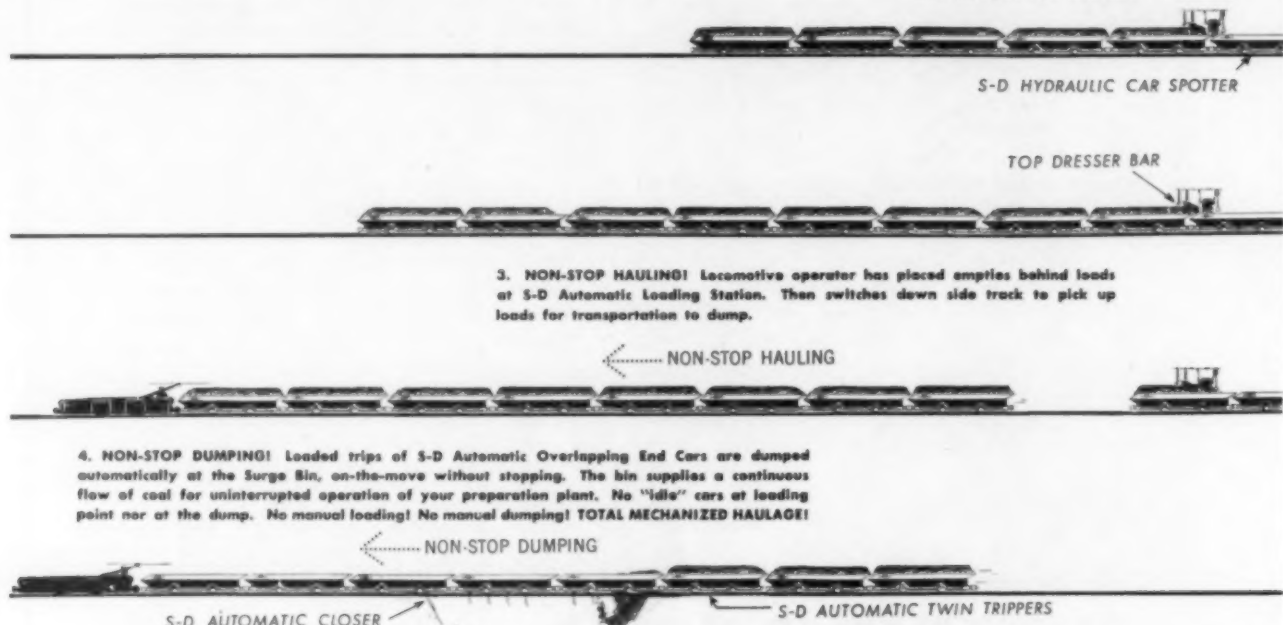


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(2) keeps a constant supply of coal available in Surge Bin for continuous and uninterrupted operation of your preparation plant . . .

(3) operates with minimum labor and minimum maintenance.

(4) requires low initial capital investment and operates at low cost per ton of production.

As you have already noted in illustration above, it makes no difference whether an S-D Automatic Overlapping End Car is in trip enroute to or from the dump . . . or in a trip being loaded . . . or in trip rolling across the dump to be emptied (and it has to be at one of those places **AT ALL TIMES**) — the car and the trip it is in are constantly and continuously **AT WORK!**

Here is what happened in actual loading of mine cars before our engineers developed the S-D Overlapping End Car, which provided practical and effective application of Automatic Loading Stations. Conventional cars were loaded in series of uneven "heaps" or surcharges, some of which were higher than roofing limitations — causing spillage and further, not providing level-width across top of sur-



charges to natural angle of repose for maximum loads, and also resulting in a hill-and-valley partial load.

NOW, since the development of the S-D Automatic Overlapping End Car, mine operators are installing a simple cross-bar or U-shaped-bar equal in height above rail to their minimum haulageway roof clearance. This is installed just beyond belt-head. The limit switch controls at the automatic loading station are set to permit each car to be loaded higher than haulageway clearance. Then, the Top Dresser Bar, as it is called, scrapes off the surplus, spreading the material sideward and also leveling the "humps" as loaded car moves under it. When end of car (and there may be some question whether S-D Overlapping End Cars have ends) is moved under this Dresser Bar, the surplus coal is plowed over the S-D Overlapping Ends into next car coming under belt to be loaded. Consider this for a moment. The only practical method to obtain a **MAXIMUM LOAD** is to load the car high and scrape surplus from one car to another — and this is done automatically! Movement of car-trips at these Automatic Loading Stations is accomplished by Sanford-Day Hydraulic Car Spotters or Sanford-Day "Brownie" Hoists. On a 10-ton S-D Overlapping End Car, for example, users report that Top Dressing permits them to load another  $\frac{1}{2}$  to 1 ton. This **PLUS** an additional  $\frac{1}{2}$  to 1 ton





# every 6th car in a trip!

**Gather round, gentlemen! Here is also NON-STOP MAXIMUM HAULAGE!**

← NON-STOP LOADING

1. **NON-STOP LOADING!** Section belt loads trip of S-D Automatic Overlapping End Cars at S-D Automatic Loading Station. Top Dresser Bar automatically dresses cars to **MAXIMUM HEIGHT** and **MAXIMUM CAPACITY**. (Note coal coming off belt directly over the S-D Overlapping Ends).

2. **NON-STOP RETURNING!** Dispatcher has instructed this locomotive operator to return his empty trip to this particular S-D Automatic Loading Station because the section has loaded out sufficient pre-determined number of cars, making-up loaded trip to be transported to Surge Bin for automatic dumping.

← NON-STOP RETURNING

more payload obtained by the S-D Overlapping Ends themselves! **SAVINGS?** At one mine 250 S-D Automatic Overlapping End Cars are doing the work that previously required 293 of the same cars without Overlapping Ends. They eliminated every 6th car in a trip! How much tonnage are those 250 cars hauling? Four thousand tons per shift — 12,000 tons a day! (Maximum haul one way is six miles, minimum is three.) What happened to the tonnage carried by the other 43 cars? The S-D Overlapping Ends and their ability to assure **MAXIMUM LOADING** are now handling their loads! How much did the changeover save them? Approximately \$250,000.00 annually! Due, in the main, to S-D Overlapping End Cars eliminating manpower at the loading stations.

Reason this direct comparison can be made is because this customer converted their conventional S-D Automatics by having us produce S-D Overlapping End "sections," which were installed on their cars at the mine. Only bottom dumping mine cars can have Overlapping Ends. You, too, can convert your present bottom dumping cars, height of car and curve radii permitting. If you are not using bottom dumping mine cars, you have the greatest opportunity in the history of mining to drastically reduce your haulage costs, an opportunity that



deserves your immediate and serious consideration.

This Sanford-Day **NON-STOP MAXIMUM HAULAGE** system is in operation daily at several mines — some large, some small. To see any one of them will surely convince you. Would you like to know where they are? If not convenient to actually see one right away, call us and we will show you documentary filmed report or we will mail film to you so you can see and study at your convenience this **NON-STOP MAXIMUM HAULAGE** system in actual mine operations. You don't want to order another mine car, regardless of design, until you do. Write or call us today!

**Sanford-Day Iron Works, Inc., Knoxville, Tennessee. Telephone 3-4191.**



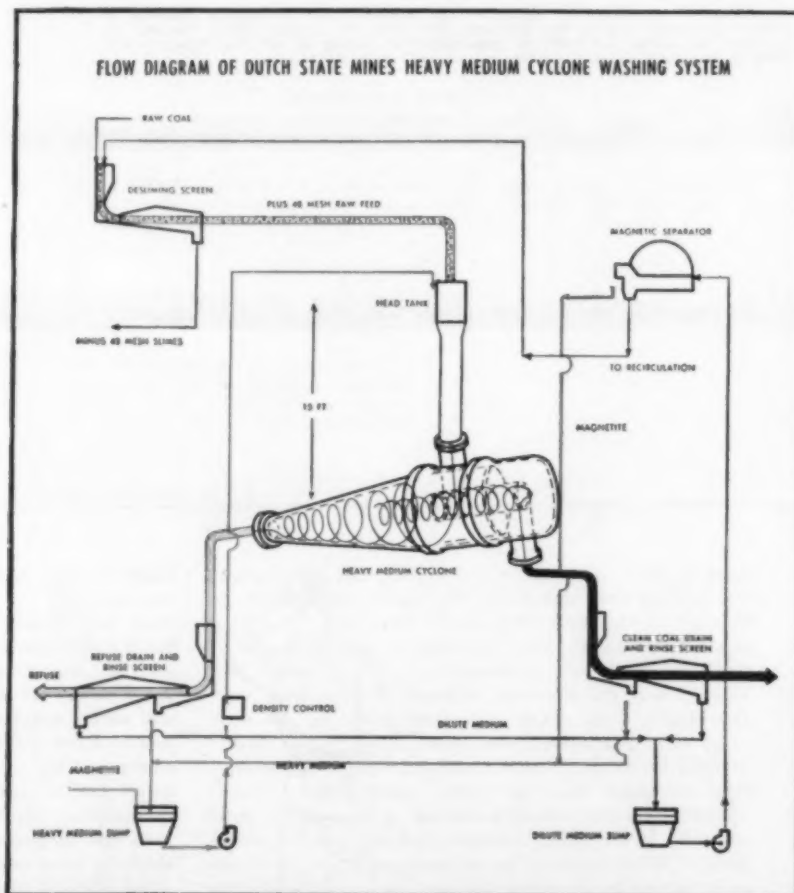
**SANFORD-DAY**  
KNOXVILLE, TENNESSEE

**MINE CARS** — all types . . . S-D Brakeman Cars . . . S-D Man Cars . . . S-D Hydraulic Car Spotters and "Brownie" Hoists . . . S-D Automatic Loading Stations for mine and railroad cars . . . S-D "Floater" Wheels . . . S-D Mine Sheaves and Rollers . . . S-D exclusive Hard-Facing Process that puts old wheels back in operation for years of additional service.

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# High Strength Welds for High Strength Steels . . .

T1 STEEL  
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JALTEN STEELS

YOLOY STEELS  
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REPUBLIC 50

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COR-TEN  
USS A R STEEL

JALLOY #3 & #7  
HI STEEL  
SHEF-TEN

. . . Specify **ATOM-ARC** ALL POSITION IRON POWDER  
LOW HYDROGEN ELECTRODES

The very ruggedness and strength of your present equipment may be attributable to the X-ray sound, high strength welds of Atom-Arc electrodes. Quality conscious equipment builders rely on the full line of Atom-Arc electrodes for welding every type of low alloy high strength steel, constructional or abrasion resistant, from 70,000 p.s.i. to 120,000 p.s.i. tensile strengths. One of these Atom-Arc grades will provide welded joints with mechanical properties comparable to your base material. Down time is costly in stripping operations and unnecessary when due to poor welds. Provide the same strength and ruggedness in your maintenance welding that was designed into your equipment originally . . . specify Atom-Arc all position iron powder low hydrogen electrodes.



The T1 steel being applied to the inner and outer surfaces of this 32 yard bucket will add greatly to its strength and life without adding unnecessary weight. The Welds must match the strength and other qualities of T1 steel, that's why Atom-Arc 'T' electrodes, designed especially for welding T1 steel, were used.



The faster welding speeds and ease of portability of the Wear-O-Matic Wire Feed Unit make possible regular maintenance work right in the pit. The operator above is applying nickel manganese weld metal to the bucket lip. The teeth will be sent to the shop for rebuilding. The modest \$279.00 price tag on this unit has induced many maintenance men to purchase separate units for shop and field use.

You can lower your hard surfacing costs with the Wear-O-Matic Process. The Wear-O-Matic semi-automatic hard surfacing process offers you the most efficient, low cost method of rebuilding equipment parts subject to wear. Wear-O-Matic wires are available in seven different alloys, each designed for a specific function in combating the varied wear conditions encountered in stripping or underground mining operations.

For better quality in your welding, and longer wearing, more economical hard surfacing write for the complete Alloy Rods package. Request Bulletin HS14. Alloy Rods Company, P. O. Box 1828, York, Pennsylvania.

## Alloy Rods Company

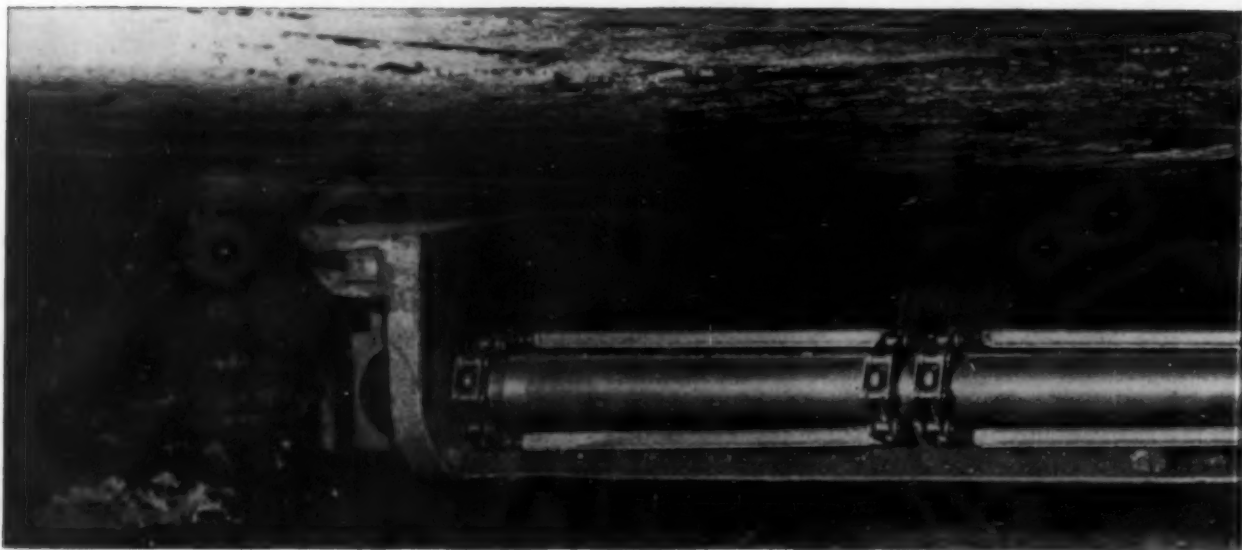
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• EL SEGUNDO, CALIFORNIA

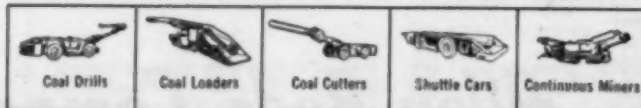


# FROM JOY... A NEW TEAM FOR **LOW COAL**

a high capacity team  
for seams as low as 30 inches



**WORLD'S LARGEST MANUFACTURER OF  
UNDERGROUND MINING MACHINERY**

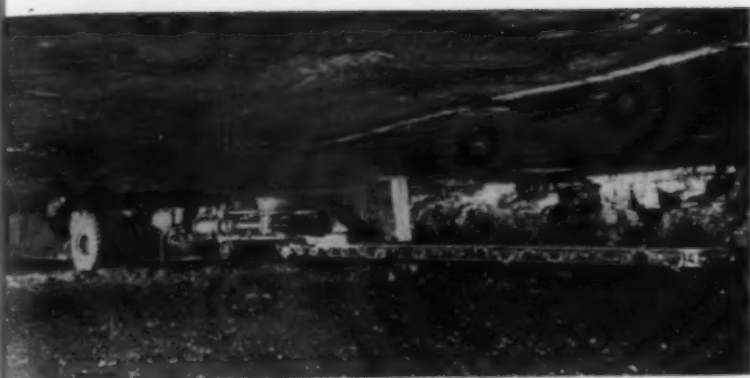


# JOY

Joy Manufacturing Company  
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company  
(Canada) Limited, Galt, Ontario

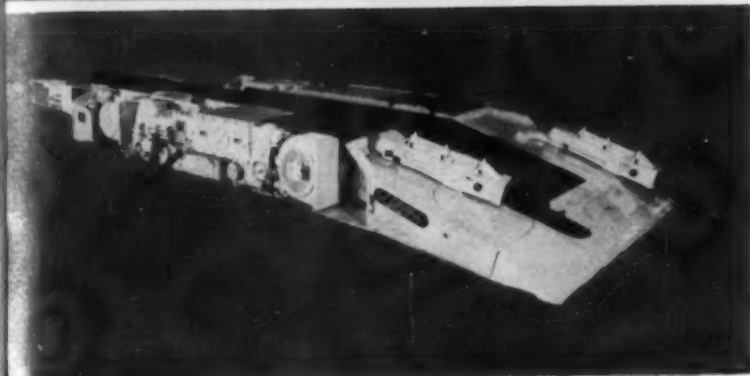




## 1 JOY 12-RB CUTTER

*overall height: 26 inches*

In mines where shear cutting is not practical, the 12-RB bottom cutter reduces initial investment. The cutter makes a cut over 30 feet wide without repositioning the machine. More time at the face is spent in cutting because there's no backing off and moving in again. Cutter bar tilt and roll make up for uneven roof or bad floor . . . can cut around faults or hard spots. Only 26" high to work seams as low as 30 inches. Bottom cuts from 9¾" below the floor to 21" above. Available in 220 or 440 volts, 60 cycle AC and 250 or 500 volts DC. Where top cutting is best another model, the 12-RT is available.



## 2 JOY 14-BU-10 LOADER

*overall height: 24 inches*

This newest loader was designed to incorporate many features of Joy's high-capacity, high-seam loaders. To cram more capacity into a 24" high loader, the 14-BU-10 has a wider head and a 30" wide conveyor. The gathering arms are faster and the conveyor moves at 360 feet per minute. Like larger Joy loaders, the machine is mechanically simple—no shifting clutches, no 2-speed transmissions. All motors and parts requiring maintenance or inspection are mounted outside the frame for easy access.

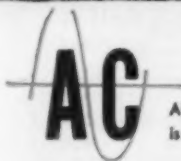


## 3 JOY 18-SC SHUTTLE CAR

*overall height: 27 inches*

Only 27 inches high, the 18-SC hauls 4½ tons . . . twice the payload of any car of similar height. The secret is a unique 6-wheel design that adds two wheels at the center and reduces wheel sizes. The two center wheels provide traction, powered by separate 10 hp motors through a direct drive. There are no transmissions or torque converters to maintain.

The car is hinged to bend up and down in the middle. This permits it to follow rough bottom with rolls and dips. The absence of wheel wells gives the 18-SC a straight through conveyor 6 ft. wide and 27 ft. long . . . empties in 20 seconds.



All Joy coal mining equipment is available with AC or DC.

WGW CL 7982-311



Installed in new type chains, these rugged Kennametal U3RA cutter bits are the answer to rough cutting.

In extreme sulphur conditions . . .

## KENNAMETAL® U3RA Bits boosted production and reduced bit cost

Irregular occurrence of sulphur lenses and balls causes a wide variety of mining conditions in the Pittsburgh No. 8 Seam. At one northern West Virginia mine, for example, bit cost for one section was only 1 cent a ton. Yet the mine average was 5½ cents. When they hit severe sulphur nests, the average jumped to 9 cents, with individual sections running as high as 67 cents. Production in those sections had to be stopped until a more economical method could be found.

On 1JCM miners, the company had been using standard carbide bits with a ½" x 1" shank. As would be expected, tip failures occurred more often than in normal cutting, but shank breakage was the big problem.

First, they tried lower cost steel bits with hardfaced tips. This lowered bit cost considerably, but it also lowered production . . . too much to become an accepted answer to the problem.

Next, they tried Kennametal U3RA Cutter Bits. This bit's stronger shank not only reduced shank breakage,

but also reduced the frequency of tip failures. Bit costs immediately dropped from 9 to 7 cents a ton. Much time formerly lost for bit changes was converted to operating time . . . and production more than doubled.

Ask your Kennametal Representative or Distributor how Kennametal bits can improve *your* production. Let him help you select and actually test in your mine the Kennametal Bit best suited to your operating conditions. KENNAMETAL INC., Mining Tool Division, Bedford, Pa.

97209

### COMPARATIVE BIT PERFORMANCE

Different bits—same section—severe sulphur

	Bits changed per shift	Tonnage per shift	Bit cost per ton
Standard carbide bit	200	225-240 tons	67¢
Hardfaced steel bit	300	175-218 tons	33¢
Kennametal U3RA bit	150	435-652 tons	27¢

\*Trademark

INDUSTRY AND  
**KENNAMETAL**  
...Partners in Progress





## KAISER ALUMINUM MINING PIPE DRASTICALLY REDUCES INSTALLATION AND HANDLING COSTS UNDERGROUND!

Ideal for compressed air lines; spray water lines; mine drainage, filtration and disposal; fuel, steam and water supply lines.

With the emphasis on mine modernization, continuous mining and improved production methods, leading mine operators are finding that Kaiser Aluminum mining pipe meets their needs as no other pipe can. Here's why:

**1. Reduced Costs.** Aluminum pipe drastically reduces installation costs underground because it's lightweight, easy to cut and fit (even in the overhead position), and requires a minimum of supports or hangers. And, if you use Schedule 5 aluminum pipe in your system, its initial cost is actually less than T&C Schedule 40 steel pipe.

**2. High Speed Installation.** Quick connecting couplers and fittings assure the fastest pipe line service for air, spray water or drainage lines. Of particular importance in accelerated mining operations, down-time waiting for air or spray water is minimized.

**3. Strong, Durable.** Kaiser Aluminum mining pipe is made of high strength aluminum alloys to take rough treatment and handling. It easily withstands normal pressures used in mining operations and resists the corrosive attack of mine atmosphere. It won't collapse under vacuum, won't become brittle when exposed to low temperatures.

The advantages of Kaiser Aluminum mining pipe make an important contribution to the coal industry's rapid rate of increased production efficiency. To get all the details on how this strong, lightweight pipe can improve your mining operations and save you money, contact us for the name of your nearest Kaiser Aluminum mining pipe distributor.

For complete information on pipe schedules, sizes, weights and strengths—mail in the coupon now for our free, illustrated booklet, "Kaiser Aluminum Mining and Construction Pipe." Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California.



THE BRIGHT STAR OF METALS

See "Maverick" • Sunday Evenings, ABC-TV Network  
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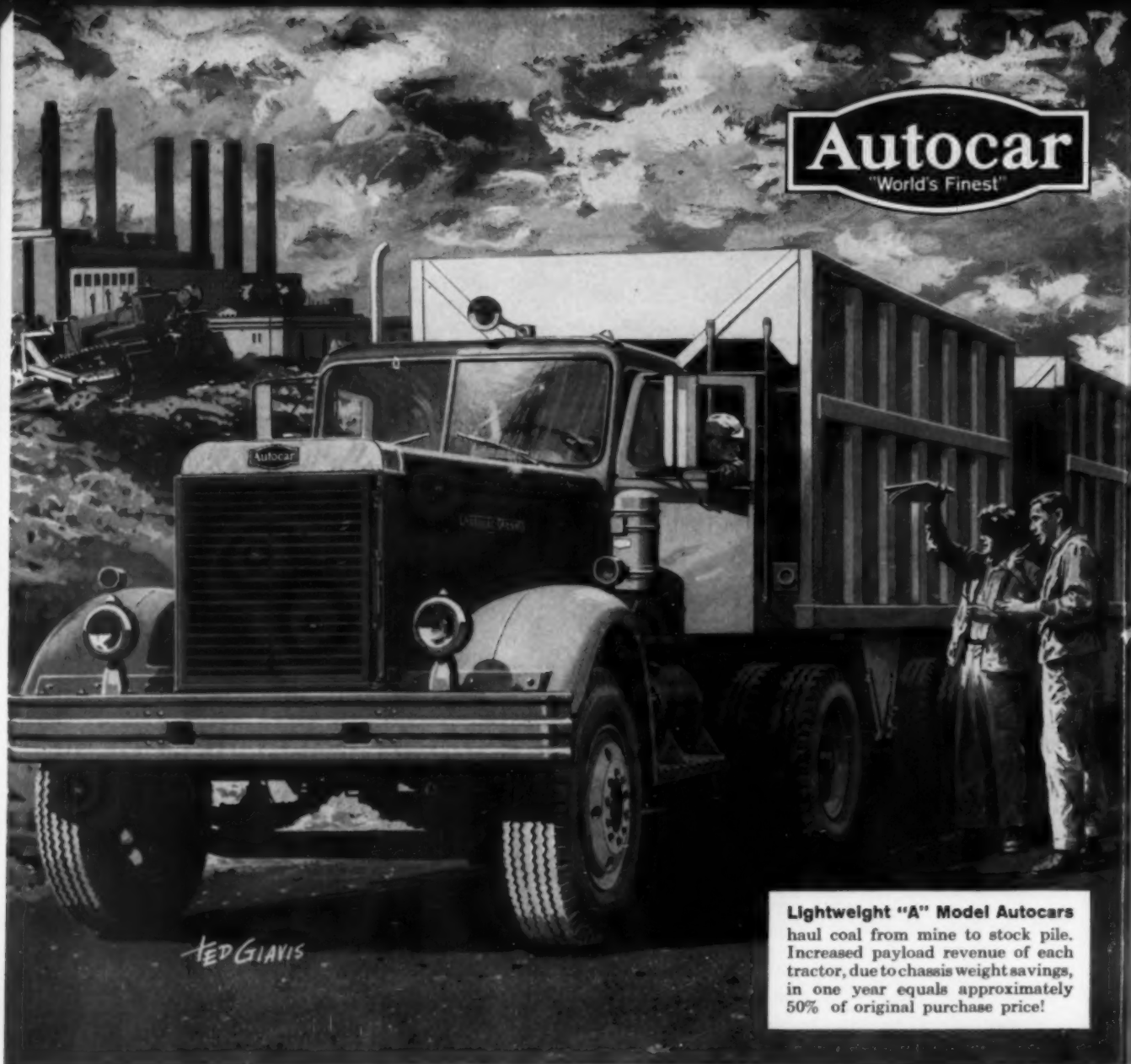
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**Autocar**  
"World's Finest"

**Lightweight "A" Model Autocars** haul coal from mine to stock pile. Increased payload revenue of each tractor, due to chassis weight savings, in one year equals approximately 50% of original purchase price!

## Payloads and Profits are PROVED Bigger with Autocar

The best, easiest, proven way to increase payloads and profits—and still remain within legal weight limits—is with the new lightweight Autocar "A" models.

These lightweights pay off fast! You haul from 1675 pounds to 4475

pounds more payload per trip... without sacrificing power or stamina.

In designing these "A" models, Autocar engineers wrote themselves a new rulebook. They built a new truck—from the wheels up—in high-strength aluminum alloys... saving

as much as 25% in chassis weight.

Autocars are tops in their class by any comparison. Don't settle for less than Autocar comfort, safety, reliability, performance and service. Don't settle for less than the "World's Finest" in heavy-duty trucks.



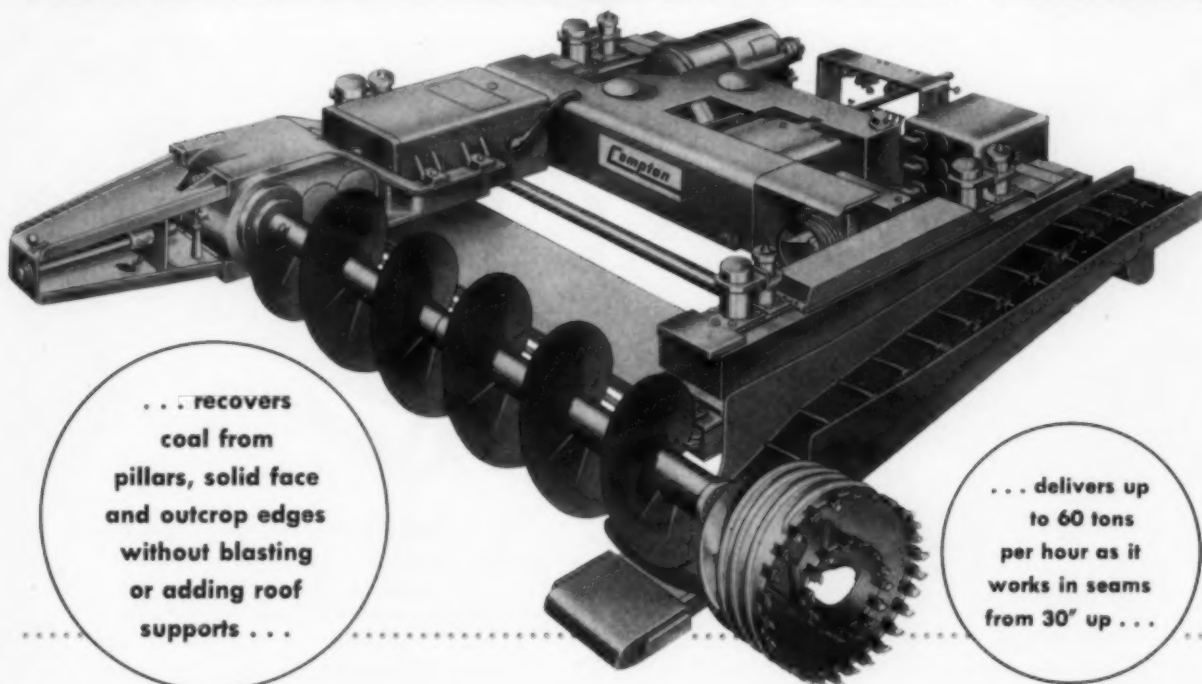
Division of  
The White Motor Company  
Exton, Pa.



# The new Model CU-32

(U. S. Bureau of Mines Approved)

## Compton Underground Auger



... recovers  
coal from  
pillars, solid face  
and outcrop edges  
without blasting  
or adding roof  
supports ...

... delivers up  
to 60 tons  
per hour as it  
works in seams  
from 30" up ...

The new Compton Underground Auger, Model CU-32 (U.S. Bureau of Mines Approved) is a self-mobile, low-type machine that packs open pit augering flexibility deep down under.

It is designed for dual or single pillar boring; dual or single conveying and loading into shuttle cars or piggy-back conveyors ... operating "solo," or "teaming up" with a continuous miner. Pays off with superiority of performance either way ... and fast enough to pay for itself!

As a "team machine," the new Compton Underground Auger cross cuts ventilation holes, then works the coal from existing pillars, the solid face and outcrop edges without roof support and blasting, after the continuous miner moves to another section.

The Compton Underground Auger self-anchors to the roof at any height from the bottom; mobility is achieved by hydraulic

walkers or optional Cat assemblies. Optional gear trains for varied auger speeds, and optional auger handling mechanism are available.

The new Compton Underground Auger, Model CU-32 is spearheaded by its patented Cutting Head which cuts 40 to 60 tons per hour in seams from 30" up. Head, equipped with Compton Friction Bit Holders and double tapered bit shanks for fast replacement, bores 24" to 38" diameter holes through coal, binders, slate, jack rock, etc. at depths to 125 feet.

The new Compton Underground Auger is AC or DC powered. Operates effectively under normal conditions with a crew of three.

**Compton, Inc.**  
ORIGINATORS OF COMPTON LUMP RECOVERY HEADS  
CLARKSBURG, W. VA.

WHEN LOOKING FOR AUGERS—LOOK TO COMPTON

# NEW AMSCO® 2 PART TOOTH

**PIN LOCK**—Special high-strength rubber with a steel insert assures positive locking of the pin.

**ADAPTER**—Has two design extras that assure a long-lasting, tight assembly. Larger bearing and supporting surfaces. Adapters are custom ground to make a close-tolerance, slack-free fit between adapter and point and adapter and lip.

**REVERSIBLE TIP**—Enables you to get longer digging life while maintaining sharpness.

**TAPERED PIN**—This tapered pin does not depend on the rubber lock to hold the tip on. Notice the "shoulders" indicated on the front of the adapter... and the mating shoulders on the pin. These shoulders lock the tip in place with metal-to-metal contact. The rubber lock, in turn, locks the pin in place.

## 3 big features for fewer shovel shutdowns

**1** You get up to four times extra wear over other 2-part teeth. We cast these new teeth of a tougher, new and special heat-treated alloy that slashes your replacement and maintenance costs.

**2** These reversible teeth stay sharp, to penetrate cleanly and easily without straining your shovel. Reversing point is easy. This reversible feature is particularly

important on corner teeth. It maintains digging efficiency throughout tooth life.

**3** Positive locking device — Amasco's unique pin-locking design secures tip to adapter in tight, positive, metal-to-metal contact.

*Order the Amasco 2-part Simplex from your local power shovel dealer.*



# AMSCO

American Manganese Steel Division • Chicago Heights, Ill.  
OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

IN MINERS ELECTRIC CAP LAMPS—

**The RIGHT SPOT**  
is the  
**WHEAT**  
**SPOT**  
every time!

Every time you turn the switch on the Wheat National, you get a perfect spot. The exact, bright-centered spot you want, made to suit your needs, from either filament! Only WHEAT gives you this most-wanted feature.

Nothing could be simpler—nothing could be better. Let us demonstrate this and the many other reasons why, today more than ever, THE TREND IS TO WHEAT.

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MODEL  
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**National Mine  
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# What's the difference in electrical cable?

## Tiger Brand Amerclad has built-in ruggedness

Of all the equipment on your job, none gets more grueling treatment than portable power cable. You drag it over sharp rocks, soak it in acid mine water, crush it, scrape it and bend it.

Tiger Brand Amerclad Cables are jacketed with flame-resistant Amerprene, a tough, hard-wearing compound that withstands oil, abrasion and constant exposure to sun, snow and rain.

One of the factors that contributes to long trouble-free life is the dynamically balanced rope lay conductors. Concentric stranded wire of the ideal size—as opposed to loosely bunched groups of fine wires—are carefully prestressed to give balanced performance and freedom from unequal elongation between conductors.

Another important factor in twin parallel cables is our "Bridgewall" construction, which actually puts a bridgewall of live Amerprene between the two insulated conductors and is an integral part of the jacket.

The same standards for materials and manufacturing practices to which the largest Amerclad shovel

and power cables are built, govern the manufacture of the smallest Amerclad portable cords.

These are a few of the unseen plus values you get when you buy Tiger Brand Cables for your shovels, welders, continuous miners, drills, shuttle cars, portable tools, and other equipment. For complete technical information, write for our free book, "Tiger Brand Amerclad Cord and Cable," American Steel & Wire, Dept. 9264, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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**Stays on the Job.** Amerclad Shovel Cable has a record of long service life that keeps expensive equipment working.

**(Right) Designed for Rugged Work.** Amerclad Mining Machine Cables are unsurpassed for resistance to abrasion, acid-mine water, oil and grease.

**(Far Right) Built-In Quality.** Amerclad's consistent high quality is maintained by modern precision equipment like the continuous lead press.



## Tiger Brand Electrical Wire & Cable

A standard cable for every special job

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- Mold-Cured Portable Cord
- Shovel & Dredge Cable
- Paper & Lead Cable
- Varnished Cambric Cable
- Interlocked Armor Cable
- Special Purpose Wire & Cable
- Aerial, Underground and Submarine Cable

# News Roundup

## Oil, Gas, Hope for Larger Role in Steelmaking

Experiments on use of petroleum fuels in several steelmaking functions attract interest of steel operators and refiners.

THE IDEA of using petroleum fuels in the iron and steel industry as a potential substitute for coal is currently drawing the attention of both steel operators and refiners, according to *Petroleum Week*, a McGraw-Hill publication devoted to the oil and gas industry.

So far, one of the greatest stumbling blocks to substituting petroleum fuel for coke has been the high sulfur content of residual oil now economically competitive. Sulfur content, according to one oil spokesman, should be reasonably low (below 1%).

Despite this problem and the fact that it is very much in the developmental stages and requiring extensive research, the use of oil and gas in steelmaking has some sound underpinnings, states PW, which cites these facts:

1. Underdeveloped countries all over the world, with little or no coal, but with both iron ore and natural gas or oil within reach, contemplate the development of steel industries of their own.

2. The conventional processes have remained substantially unchanged for many years but are changing rapidly now.

**Chief Uses**—Research is aimed at opening the door to widescale use of petroleum products and gas in the blast-furnace process. Fuel oil and gas are already widely used in open hearth furnaces. Refinery products, particularly the "aromatics," it is noted, are decidedly more satisfactory than fuels of solid origin for open-hearth practices because they produce a more luminous flame, a very desirable condition. Coal tar products contain aromatics but are loaded with impurities and sulfur, says PW.

For this reason, coal tars are at present being upgraded through methods native to the oil refining industry in



OIL and gas are used extensively for fuel in open hearth furnaces such as this. Refiners, hoping for a bigger slice of the iron and steelmaking business, are researching blast-furnace, direct reduction and "beneficiation" techniques.

order to put them on a competitive basis with petroleum products as open-hearth fuels, it adds.

**Blast Furnace**—Extensive tests done on substituting gas for coke in blast furnaces showed that it is possible to increase iron production by as much as 25%, notes the magazine. Some coke would be used to support the steel load but a substantial amount would be "backed-out," (as much as 20% in experiments) by using gas to supply the heat to melt the iron and for reducing iron oxide to metallic iron.

Backing out some of the coke in favor of a fuel of petroleum origin has shown

several definite advantages, according to PW. The work of the furnace is improved, the gases leaving the furnace have a higher heat content for future use in heat exchangers, and gas is more easily handled than coke.

**Other Possibilities**—Other markets oil and gas would like to secure a part of are the "beneficiation" of iron ore prior to loading it into the blast furnace, and direct reduction. But before any real progress towards any of these goals can be made it is apparent that many clouds must be cleared away. In fact, little is known about the reactions which actually take place when gas or oil replace coke, notes PW. And the question of where and how should it be admitted into the furnace is still unanswered.

### In This Section

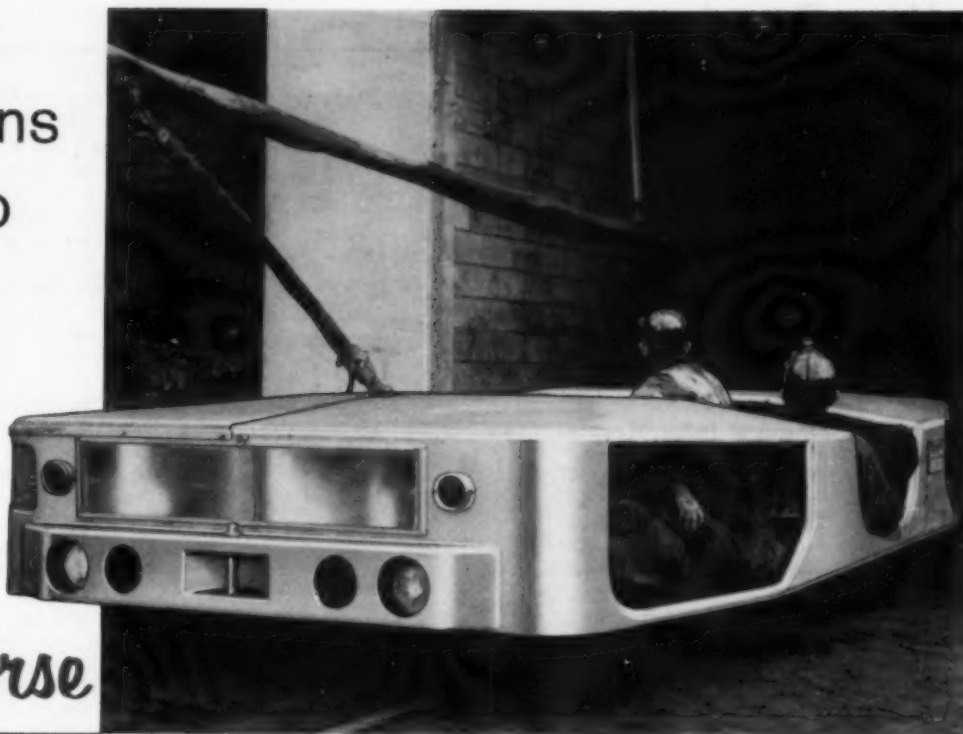
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## Knox Probers Urge New Mine Laws

Preferring to let state and local prosecutors fix the blame for the flood at the River Slope opening of the Knox Coal Co., Port Griffith, Pa., Jan. 22, the special 10-man committee of the Pennsylvania legislature concentrated instead on ways and means of preventing a repetition. The flood, resulting from a break in the mine

Reasons  
why so  
many  
mines  
use  
the

*Lee-Norse*



## **LOW** mine portal bus

- ① **FAST**—Cuts portal to portal time as much as 50%.
- ② **STREAMLINED**—Transports 11 to 13 men in safety and comfort in low seams.
- ③ **SAFETY**—Exclusive split-roof allows operator full directional vision—trolley pole easily reached. Quick acting hydraulic truck-type brakes on each axle and on the traction gearmotor. Independent mechanical hand parking brake each axle.
- ④ **POWERFUL**—Self-propelled by sturdy traction-type 15 HP gearmotor (250 or 550V—DC).
- ⑤ **RUGGED**—Quality built to withstand the hard usage of 'round the clock mining!
- ⑥ **LOW MAINTENANCE**—Simple design—easy accessibility.
- ⑦ **OPTIONAL FEATURE**—Electric dynamic brakes for plus safety on severe grades.



*Lee-Norse Company*

CHARLEROI, PENNSYLVANIA

Specialists in Coal Mining Equipment



## News Roundup (Continued)

cover, letting in the Susquehanna River, cost 12 lives. The bodies have not yet been discovered.

"Responsibility for the disaster . . . was occasioned not only the negligence of any particular person or persons but by a chain of events" involving personnel of both the owner of the property and Knox, the lessee. Recommendations for preventing a recurrence, embodied in bills introduced July 28, the day after the report was released, were:

Establishment of safety zones beneath and adjacent to bodies of water and no mining in such zones except as authorized by the state after submission of maps and plans. Special permission for such mining could be obtained by the owner or lessor only.

No approval for mining to be granted where rock cover is less than 35 ft thick, and regardless of this limitation no pillaring in safety zones except after approval of plans by the state. Definite proof of the existence of 35 ft of rock would have to be supplied.

Other general committee recommendations included the following:

Legislation requiring at least one registered professional engineer, appointed by the state, for each anthracite district. "Of all the causes leading to the disaster . . . the lack of any design or checking by professional mining engineers was paramount.

Adoption of provisions aimed at informing mine inspectors of specific work done between inspections; for advising mine workers of nearness to water; for appointment of mine safety committees filing monthly reports with the state; and for state inspection at least every 2 mo.

More-precise inspection reports and safety orders.

Thorough posting of mine inspectors new to their areas.

Informing mine workers on escape-ways and clear marking of routes.

New Legislation requiring mine owners to recover bodies at their expense.

Adoption of much-severer penalties for violations of laws and regulations.

The Pennsylvania Justice Dept. already has initiated court action to recover \$1.3 million of state funds spent in disaster work from the two coal companies. As another aftermath, the state discontinued emergency pumping at Pittston July 24, bringing in the possibility of complete loss of all properties in the area since the coal companies involved would find it difficult or impossible to assume the financial burden of keeping water under control completely by themselves.



### School Teachers Tour Enoco Mine

A GROUP of 30 school teachers were recent guests of the management of Enoco Collieries, Inc., at the company's mine at Bruceville, Ind., in the first of an annual affair to be known as "Teachers in Industry Day." The program, which is designed to cement relationships and understanding between teachers and the local business community, is sponsored by the Vincennes, Ind., Chamber of Commerce. John Stachura, vice president of Enoco, briefed the teachers on coal's problems and progress and on the particular conditions and operations at Enoco. A number of mine supervisors acted as guides during the mine-and-plant tour which followed. The teachers select the industry they wish to visit.

### Buys Coal Firm

Peabody Coal Co. has announced it will acquire the stock of Sunnyhill Coal Co. and Sunnyhill Coal Sales Co. The agreements will involve the exchange of 257,925 shares of Peabody common stock for all the stock of both Sunnyhill companies. At recent prices for Peabody common the transaction would amount to almost \$4 million.

Sunnyhill Coal Co. owns and operates its Mine No. 8 near New Lexington, Perry County, Ohio. This mine produces about 1.5 million tons of coal annually by the strip mining method, using large-scale modern equipment including a giant 65-yd stripping shovel bought in 1958.

In addition, the firm owns and

operates the Glen Ebon preparation plant which processes approximately 325,000 tons annually of coal produced by independent stripping contractors on land leased from Sunnyhill Coal Sales Co. The entire output of this plant is delivered to a nearby electric utility firm. The Coal Sales Co. also markets the output of Mine No. 8.

The major market outlets for this coal are industrial users in northwestern Ohio, eastern Michigan and other areas east of those served by Peabody from its present operations. Merl C. Kelce, Peabody president, emphasized in the announcement that the acquisition of the new properties will enable Peabody to extend its activities into market areas it does not now serve.

Mr. Kelce said the Sunnyhill properties are expected to record sales of \$7 million for all 1959, however, only sales and earnings after Aug. 1 will accrue to Peabody. It will take several months more because of acquisition costs, he added, before appreciable profits from Sunnyhill will be gained by Peabody. In line with the acquisition, several personnel changes will be made. Arnold E. Lamb, president of Sunnyhill Coal, will become Peabody's general manager of Sunnyhill mining operations. D. H. Swanson, vice president of Sunnyhill Coal and president of Sunnyhill Coal Sales Co., will join Peabody as sales manager in charge of Peabody's Columbus, Ohio, office. H. Gerrit Ward, board chairman of Sunnyhill Sales, will become vice president, sales, of Peabody in charge of its office to be opened in Detroit, Mich.

### Safety Bill

A proposal to bring small coal mines under the Federal mine safety law won the Senate Labor Subcommittee's approval Aug. 18.

The measure, introduced by Sen. Joseph S. Clark (D-Pa.), would make all mines subject to the same inspection and mine safety regulations. Mines with 14 or fewer employees are now exempt.

The bill was approved by a 4 to 3 vote along party lines, with Democrats for and Republicans against. As we went to press it was scheduled next to be acted upon by the full Senate Labor Committee.

Meanwhile, operators of small coal mines testifying before a House labor subcommittee, objected vigorously to the proposal. B. F. Reed, Drift, Ky., said proponents of the bill to a large extent were interested in eliminating the small operator. J. B. Taggart, Norton, Va., also said he thought the large coal



# Right off the

# Wire

42. A 150-watt lamp only three and one-half inches high is said to give a screen brilliance in a movie projector equal to that of a 750-watt lamp.

43. A new electron tube that will go inside a thimble is being made to compete with the transistor.

44. Rustproof hub caps for automobiles are being made of fiberglass.

45. Bulbs can be installed in a new electric light fixture with only a quarter of a turn.

46. An inexpensive attachment for any radio sounds an audible warning if radioactive fall-out reaches a dangerous level.

47. A giant earth mover, driven by an electric motor in each of its eight wheels can scoop up a fifty-ton load in less than two minutes.

48. Ultrasonic energy, used in machining hard or brittle metals, can now be transmitted around corners.

49. A research camera with 1,200 lenses can take pictures at the rate of 42,000 per second.

50. A new diesel-electric locomotive can be switched to third-rail operation without stopping.

51. Electric automobiles are in production again. Range on a charge is eighty miles.

52. A miniature TV system made for use in a missile weighs only nine pounds and has a range of 1,000 miles.

53. Maximum spark at all engine speeds is claimed for a new transistorized ignition system for internal combustion engines.

54. The first telescope in space is in the plan stage. It would map the sky in ultraviolet light which is blocked by the earth's atmosphere and would be supported by an unmanned orbiting vehicle.

55. A proposed atom smasher would be two miles long and eight times more powerful than any now in existence.

56. Paraplegics may use a new typewriter in which photoelectric cells are substituted for keys. A lamp on the user's head actuates the cells.

**Further information on these news items and on Simplex cable is available from any Simplex office. Please be specific in your requests.**

57. Aluminum shingles are now being made in a variety of permanent baked enamel colors.

58. A new helicopter can carry six tons of cargo.

59. A system of harnessing helicopters in teams by the use of metal spreaders has been developed.

60. An electric drink mixer that can be used anywhere operates on flashlight batteries.

61. A dentist has invented a toothbrush powered by an electric motor.

62. The successor to the "Jeep" is a new 1,700-pound vehicle powered by an aluminum, air-cooled V-4 engine.

63. A New York Bank has installed a clock, powered by a radioisotope, that will run for 200 years without winding.

64. Interchangeable tips for pliers make one tool serve many purposes.

65. The Air Force has discovered that submerging a man in water doubles his resistance to acceleration.

66. A new Army rifle is replacing the Garand. It holds twenty cartridges which can be fired at the rate of twelve and one-half a second.

67. Plate glass floated on the surface of molten metal is said to have a better finish than that produced by grinding and polishing.



## A NEW MINE— UNDER 50' OF WATER!

Seven miles off the coast of Louisiana, Freeport Sulphur Co. is completing the world's first offshore sulphur mining plant. This unique engineering project consists of a Y-shaped steel island nearly one mile long (the world's largest) erected over a major new sulphur deposit known as Grand Isle.

Supplying power to the drilling platforms and other machinery are Simplex ANHYDREX XX insulated Submarine Power Cables. With a background of forty years' service to the mining industry, Simplex is proud to have contributed to this pioneering project.

**SIMPLEX WIRE & CABLE CO.**  
Cambridge, Massachusetts and  
Newington, New Hampshire

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Highest quality cables for: Mining  
Power & Lighting • Construction  
Transportation • Communications  
Signalling

## News Roundup (Continued)

operators were trying to hamper the small ones.

Both men testified on bills that would erase the exemption from the Federal Mine Safety Act now given to coal mines employing less than 15 persons. There are so many differences between big and small coal mines it's like comparing a big ocean liner to a motor boat, Mr. Reed said. "We do not oppose standards that are set up to meet the conditions that we have," he added.

Mr. Taggart said he wasn't opposed to any "needed proper legislation." Both said it would cost the small operator, now subject to state laws, too much to operate under Federal safety laws. They suggested a Federal study to find out what was needed.

### Water-Control Set for Anthracite

Approval of a new anthracite mine-water-control project near Wilkes-Barre, Pa., expected to cost about \$202,000, was announced by the Dept. of the Interior July 31.

Site of the project, latest proposed by Pennsylvania under a \$17-million state-federal program, is Plymouth Township, Luzerne County. Diversion of surface water is the major goal, and it is estimated that the project will keep 310 million gallons a year from anthracite workings near Plymouth. Combined with a pumping plant approved earlier by the department and now installed in the Glen Alden Buttonwood-Nottingham mine, the new project will give adequate protection against flooding to four adjoining mines, either active or in reserve.



**WOW!** Kids are overwhelmed by the size of huge tire built by Goodyear Tire & Rubber Co. The tire, said to be world's largest, weighs 2 tons, stands 10 ft high and 4 ft wide, and costs \$14,000. It is to be used for giant machinery.

### Profitable Shale Oil

The shale oil deposits of Colorado could be the foundation of a money-making industry by 1965. At the same time the Western coal industry should be making a comeback—perhaps even earlier. These predictions, at the recent Western Resources Conference, Boulder, Colo., were made by John G. Welles, Denver Research Institute, and W. S. Landers, coal research director, U. S. Bureau of Mines, Denver. Mr. Welles based his shale-oil opinion on research advances and a projection of economic trends, which could bring commercial shale-oil production by 1965, "or perhaps a few years later."

### Aid For Coal

A bill authorizing a \$2 million start on a new research program aimed at developing new uses for coal won approval July 27 in the Senate.

The measure calls for creation of a new agency, the Coal Research and Development Commission, to handle the program.

The final vote in favor of the measure came after the Senate had rejected a substitute bill by Sen. Gordon Allott (Rep., Colo.), which sought to place the study in the hands of the Bureau of Mines.

As passed by the Senate, the bill would set up a 3-member coal commission appointed by the President as a largely independent agency.

### Create Energy Board

The Canadian Parliament has passed a bill bringing into creation a National Energy Board. The Board will consider applications for export and import of natural gas and will coordinate all energy sources.

While the 17-member Board has not been appointed yet, there are three applications already awaiting its consideration. Two cases involve exporting natural gas to western United States while the other is an application by Trans-Canada Pipe Lines, Ltd., to export gas to Midwestern Gas Transmission at the Minnesota boundary.

An application by Midwestern Gas to import Canadian gas has been temporarily on the shelf while the Federal Power Commission recessed during August.

### Safety

Cardiff No. 1 mine of the Imperial Coal Corp. took first place in the 22d

annual first-aid meet of the Central Pennsylvania Safety Association, receiving a \$350 cash award and a Mine Safety Appliances Co. plaque, presented by V. A. Stanton, district manager. Second place went to Revloc No. 32 mine, Bethlehem Mines Corp., \$175 and the National Coal Association trophy, presented by R. T. Laing, secretary of the Central Pennsylvania Coal Producers' Association. Third place was taken by Mine No. 73, Bethlehem Mines Corp., \$140 and the UMWA trophy.

### Mines, Companies

United States Steel Corp.'s Tennessee Coal & Iron Div. will sink a development shaft in the Mary Lee seam of the Warrior coal field near the confluence of Big Shoal Creek with the Warrior River, it has been announced.

The purpose of the work will be to explore mining and other conditions at that location for the possible eventual installation of a new mine to help provide the division's future coal requirements.

The Kirk Coal Mining Co. recently closed down after 15 yr of operation.

The mine is 3 mi east of Central City, Ky. It was closed, said Morton Jones, general superintendent, because general conditions in the mining business make it no longer profitable. The mine, which employed 140 men, produced about 2,200 tons of No. 9 coal in two 8-hr shifts. Coal was shipped entirely by rail.

Twenty-five Sahara Coal Co. scholarships covering tuition and fees will go to Southern Illinois University forestry students this fall.

The awards are part of 60 scholarships provided by the coal firm in 1957 for distribution over a 4-yr period to qualified SIU students. In announcing the scholarship grant to SIU, Henry C. Woods, chairman of Sahara's board of directors, pointed out the firm's desire to help students interested in forestry careers because of the present need for adequately trained foresters.

Hi Hat Elkhorn Coal Co., Hi Hat, Ky., has been bought by a group headed by John R. Fields, Huntington, W. Va., formerly vice president and treasurer of Guyan Eagle Coal Co.

Mr. Fields announced recently that the new corporation had taken over the physical assets, leasehold and inventories of Hi Hat Elkhorn, which, according to recent figures, produced more  
(Continued on p 64)



PAYS OFF AGAIN WITH

## SynchroTouch

### HOW IT WORKS

*SynchroTouch Transmission Control* uses hydraulics as a source of power and is activated and controlled electrically. When the desired gear is dialed, the following sequence occurs on an upshift in a split second:

1. Control Unit signals master clutch to disengage.
2. Control Unit signals hydraulic system to shift transmission to neutral. Shifting collar is disengaged from present gear.
3. Generators notify Control Unit when transmission is synchronized for shift (shifting collar and desired gear at same RPM).
4. Control Unit signals hydraulic unit to shift to desired gear. Shifting collar engages new gear.
5. Control Unit signals master clutch to re-engage. SHIFT COMPLETE.



# DIAL A GEAR

## FOR TOUCH AND GO SHIFTING

Now Caterpillar research gives you an advanced new way to shift gears. Operator simply dials desired gear. Split-second shifting. Available for DW20 and DW21.

From Caterpillar's No. 1 Project\* comes one of the most important earthmoving developments of recent years—*SynchroTouch Transmission Control*. This remarkable advance combines economical direct drive transmission with the easiest, fastest shifting imaginable.

SynchroTouch Transmission Control is an optional arrangement for Cat DW20 and DW21 Tractors that permits effortless shifting of transmission gears by means of a gear selector conveniently placed near the operator's right hand.

To shift up or down, the operator simply moves a selector switch to the desired gear. In less than a second it is engaged. The standard foot clutch is retained, but it is used only when starting from a standstill.

Fully job tested in the field, SynchroTouch Transmission Control is ready now to give you these benefits:

1. Faster shifting—for faster cycles, more payloads per hour.
2. A significant reduction in operator fatigue—for higher daily production.
3. Economical direct drive transmission—uses standard DW20 and DW21 transmission and clutch components.
4. No special maintenance required.

Add SynchroTouch Transmission Control to either the new DW20 or DW21 Series G, and you have the last word in modern, high-speed, efficient earthmoving.

Both of these outstanding Caterpillar wheel-type Tractors are delivering more horsepower (345 HP), more rim-pull and greater capacity than ever before. Now see them in action with the SynchroTouch Transmission Control!

Call your Caterpillar Dealer today—and ask for a profit proving demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

\*Caterpillar's multimillion-dollar research and development program—to meet the challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

# CATERPILLAR

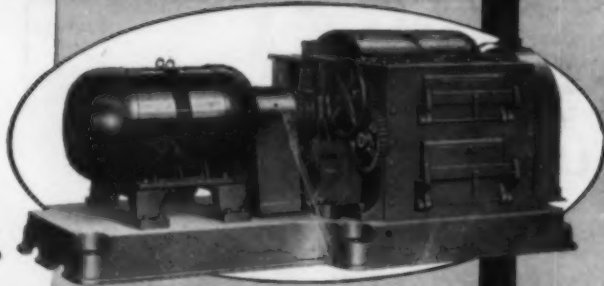
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**BORN OF RESEARCH  
PROVED IN THE FIELD**



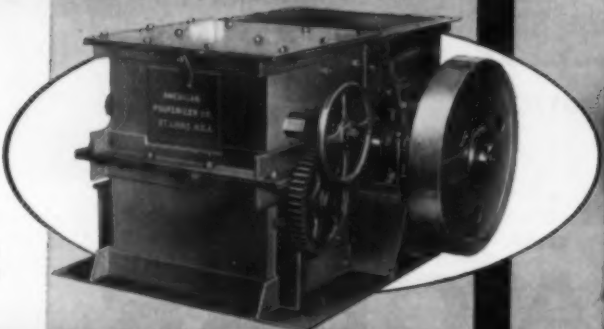
## When You Figure . . .

**AC Series**  
capacities to  
800 TPH



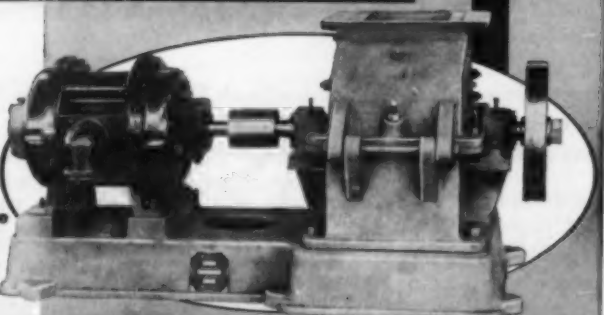
## Reduction Cost Per Ton . . .

**WC Series**  
capacities to  
90 TPH



## the Best Answers\* . . .

**Coal Sample  
Crushers**  
capacities to  
2000 Lbs.  
Per Hr.



## Come from *American* Ring Coal Crushers

\*In a recent independent survey, it was found that American Crushers reduced over 61,000,000 tons of coal at a parts replacement cost (including standby parts) of less than 1/10th of 1¢ per ton.

**THERE CAN BE NO BETTER PROOF OF AMERICAN QUALITY!**



WRITE for Literature on These Crushers

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## Equipment Approvals

*Nine approvals were issued during July.*

Goodman Mfg. Co.—Type 965C tractor tread loader; four motors, each 30 hp, 440 V, AC. Approval No. 2F-1480A, July 1.

K W Dart Truck Co.—Model 6S-UGD underground truck with a Waukesha 195-DLC diesel engine and Dart conditioner for use in noncoal mines. Approval No. 24-21, July 6.

The Long Co.—Type M.B.C.-2 mobile bridge carrier with PT-18 or PT-218 piggyback conveyor; two or three motors, one 40 hp and one or two 5 hp, 550 V, AC. Approval No. F-1481A, July 13.

Joy Mfg. Co.—Type ICM-3CF continuous mining machine; seven motors, two 100 hp, one 15 hp, two 10 hp and two 7½ hp, 500 V, DC. Approval No. 2F-1322A, July 21.

The Jeffrey Mfg. Co.—Type MT67 cable reel shuttle car; five motors, three 15 hp and two 10 hp, 250 V, DC. Approval No. 2F-1482A, July 28.

The Jeffrey Mfg. Co.—Type MT67 cable reel shuttle car; five motors, three 15 hp and two 10 hp, 500 V, DC. Approval No. 2F-1482A, July 28.

The Long Co.—Type M-520 chain conveyor; one motor, 40 hp, 550 V, AC. Approval No. 2F-1483A, July 29.

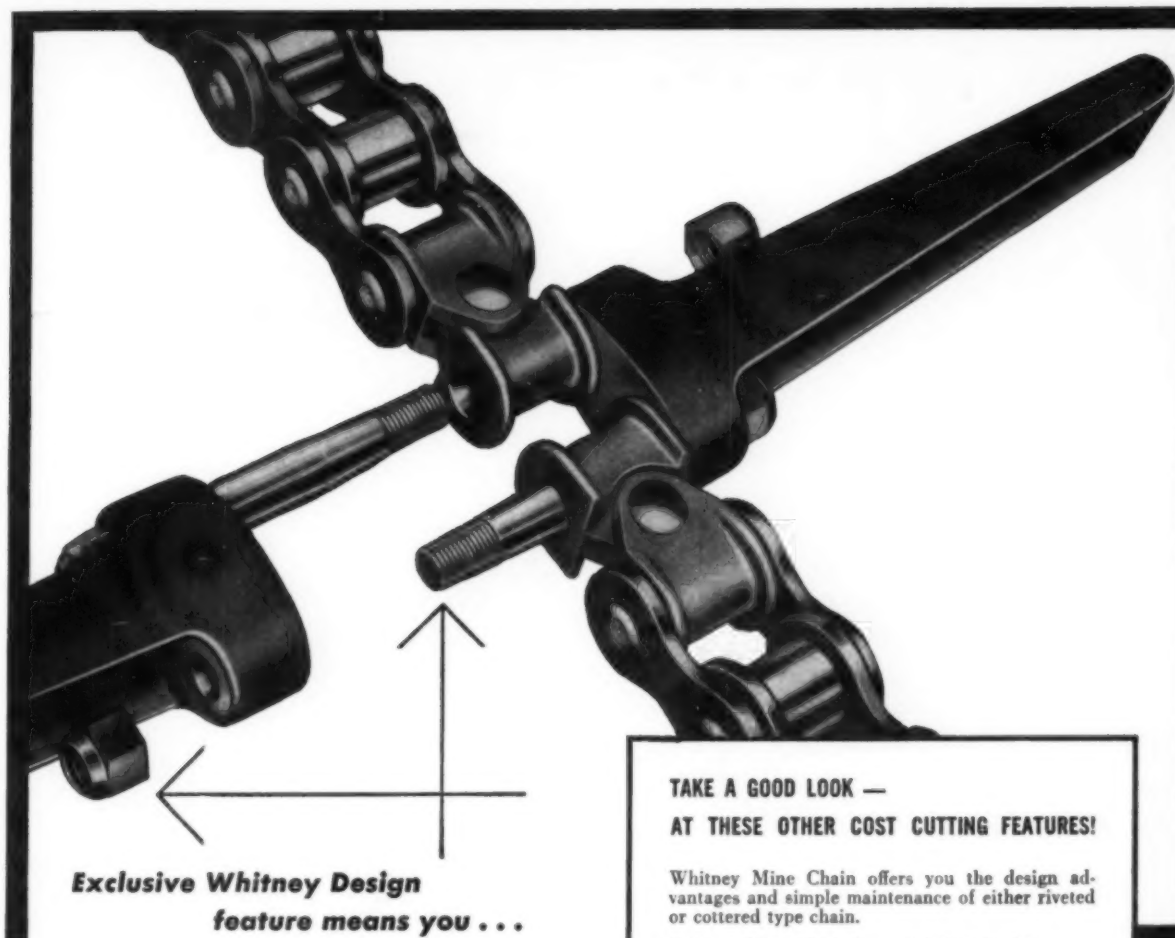
Electric & Machine Supply Co.—Type 65C-5E rebuilt Joy cable reel shuttle car; three motors, each 7½ hp, 250 V, DC. Approval No. 2F-1484, July 29.

Lee-Norse Co.—Model CM48-I K/M continuous mining machine; three motors, each 50 hp, 250/500 V, DC. Approvals Nos. 2F-1485 and 2F-1485A, July 31.

### Correction . . .

In our August issue, Martin Burke Jr., author of "Opportunity for Coal: Regional Selling of Coal-Burning Equipment," was listed as president of North Western-Hanna Fuel Co., and Coal Burning Equipment Co., Minneapolis, Minn. This was an error. Mr. Burke is president of North Western-Hanna Fuel Co., but A. D. Robinson, vice president of Northwestern-Hanna Fuel Co., is president of Coal Burning Equipment Co.





**Exclusive Whitney Design**  
feature means you . . .

## stop Dumping Dollars on the scrap pile!

Whitney Loader Chain flight design featuring tapered studs and self-sealing lock nuts make every Whitney flight completely detachable . . . completely reusable.

This means you can salvage expensive flights for additional service . . . save money ordinarily thrown away with worn out chain.

This is a PLUS feature of Whitney Mine Chain . . . specifically designed for modern mining operations. Whitney design means profitable tonnage and lower costs on your loader and continuous miner operations.

### TAKE A GOOD LOOK — AT THESE OTHER COST CUTTING FEATURES!

Whitney Mine Chain offers you the design advantages and simple maintenance of either riveted or cottered type chain.

Whitney Mine Chain has solid Stud Bushings . . . provides greater chain pin support by extra rigid design. Self-cleaning, eliminates stiff chain joints. Whitney Mine Chain has forged steel flights and universal joints, 100% Magnafluxed and Mar-Tempered.

Whitney makes a Universal Joint Chain for all type loaders and continuous miners, designed to assure long service life under the most rugged operating conditions.

*Whitney manufactures the entire product, both chain and flight, to assure complete integration, balanced design, and a fast, complete customer service.*

Whitney distributors, located in all mining areas, carry full stocks of mine chain and American Standard precision steel finished power transmission and conveyor chain. Catalogs on request.

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ROLLER CHAIN

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SPROCKETS

FLEXIBLE COUPLINGS

# JEFFREY SERVICE starts w





**"ONE OF THE MOST IMPORTANT QUALIFICATIONS** for Jeffrey sales engineers," says W. G. Montgomery, District Manager at Bluefield, West Virginia, "is a keen power of observation. Thus he builds up experience that is invaluable to his customers." Montgomery is shown at Omar Mining Company, Omar, West Virginia, where Jeffrey recently system-engineered all cutting and loading equipment for Mine 15. The first new unit in service (cutter, loader and 2 shuttle cars per unit) has delivered 677 tons of clean coal per shift. Drift mine height is 39" to 56".

# s with system engineering

When you discuss your mining machinery requirements with Jeffrey, you will work with an experienced sales engineer.

He not only knows the ability of his equipment but knows coal mining, too. Years of experience with all kinds of mining conditions have made him adaptable... given him the know-how to help you achieve low cost production.

Thus the Jeffrey sales engineer studies your mining problem thoroughly. For example, a recent proposal for the mine of a major coal company included a complete study of the seam conditions and mining projection—indicating production, personnel requirements, predicted costs and equipment to do the job. This kind of system engineering pays off for the purchaser.

Give Jeffrey's complete service an opportunity to work for you. *You'll find it pays off in predictable results.* The Jeffrey Manufacturing Company, 912 North Fourth Street, Columbus 16, Ohio.

**OFFICES:** Birmingham, Alabama; Bluefield, West Virginia; Denver, Colorado; Evansville, Indiana; Harlan, Kentucky; Iron Mountain, Michigan; Los Angeles, California; Pittsburgh, Pennsylvania; Salt Lake City, Utah.



**JEFFREY TEAM ON THE JOB**—System engineering gets follow through from an experienced team as new equipment goes into service. Shown are Montgomery; Sales Engineer P. M. Campbell; Application Engineer D. R. Ellis; Serviceman W. C. Mayo; Chief Demonstrator R. W. Ramer; Demonstrator Leon Damron.



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# Traction motors take 1000 volt jolt underwater at National

*The Specialists in electric coils...repair/service*

National Electric Coil now rewinds traction motor armatures with NECCOBOND coils and vacuum impregnates in Epoxy resin. This combination offers you longer life and more dependable motor service because of these reasons:

- high thermal stability
- outstanding electrical properties
- cooler operating temperatures
- excellent mechanical strength
- inertness to water, chemicals, greases.

So effective is the National system that both field coils and armatures pass a 1000 volt d.c. test while immersed in water. Several armatures have been left underwater several weeks without a significant reduction in insulation resistance.

If you want the kind of superior performance that this insulation system makes possible, contact National for your renewal or modification needs.



For more information call  
National's Columbus plant... HUDSON 8-1151,  
or call the nearest National field engineer.

## National Electric Coil

DIVISION OF McGRAW-EDISON COMPANY  
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ELECTRICAL ENGINEERS • MANUFACTURERS OF ELECTRICAL COILS, INSULATION, LIFTING MAGNETS • REDESIGNING AND REPAIRING OF ROTATING ELECTRICAL MACHINES



when you put Bowdil Bits

in a Bowdil Chain

on a Bowdil Bar ...

you find your greatest economy.

*The* **BOWDIL** *Company*  
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# People in Coal



**ROBERT HOLMES HUGHES**, elected to the chairmanship of the Program Committee for the 1960 Coal Convention of the American Mining Congress, began his long and accomplished association with the coal industry at the age of 24, as an engineer with the Clinchfield Coal Co.

Today, as president of Clinchfield Coal Co. and vice president of The Pittston Co., he is recognized as an outstanding leader in the business of mining and processing coal.

Born Jan. 2, 1911, in Spartanburg, S. C., he received his college education at Clemson, graduating in 1932 with a B. S. degree in mechanical and electrical engineering.

After working a number of years with a textile firm, he joined the Engineering Dept. of Clinchfield Fuel Co. and was promoted in 1940 to assistant chief engineer of Clinchfield Coal Corp. He continued in that capacity, except for 4 yr in the Army in World War II, until 1947, when he became chief engineer.

After 4 yr as chief engineer he was elected vice president, operations, in 1951, and was elected president of the corporation in 1952. When Clinchfield Coal Corp. was merged in 1956 with The Pittston Co. he took on the added position of vice president of Pittston in charge of coal operations.

Mr. Hughes is a member of various organizations including: Bituminous Coal Operators Association; Bituminous Coal Research, Inc.; Virginia Manufacturers Association; and executive vice president of both Lillybrook Coal Co. and Amigo Smokeless Coal Co.

He is also associated with the AIME and the American Society of Mechanical Engineers. Married and having one son, Mr. Hughes enjoys fishing along with his principal hobby, work.

## To Head AMC Committee



Mr. Mauck is a member of the AIME, the West Virginia Mining Institute and the Mine Inspectors Institute of America among other organizations. His hobbies include photography, boating, skiing, fishing and tennis.

The Mining Electro-Mechanical Maintenance Association recently chose the Central Advisory Council officers as follows for 1959-60:

**President—Chester S. Conrad**, superintendent of maintenance, Mountaineer Coal Co., Monagah, W. Va.

**Vice Presidents—Robert A. Huth**, Universal Welding & Metals, Inc., Pittsburgh; **Harry J. Young**, Cooke-Wilson Electric Supply Co., Ebensburg, Pa. and **Adam V. Sypneski**, maintenance engineer, Rochester & Pittsburgh Coal Co., Indiana, Pa.

**Executive Committee, Branch Members—Johnstown, Steve Andrejko Jr.**, U. S. Bureau of Mines; Barnesboro, **John Buck**, Sterling Coal Co.; Allegheny Valley, **T. Clyde Esler**, Joy Mfg. Co.; Greensburg-Irwin, **Abe L. Gray**, North American Machine Co.; Ohio Valley, **Monroe J. Mechling**, Valley Camp Coal Co.

**Executive Committee, Council Members—Howard W. Davies**, Anaconda Wire & Cable Co.; **George E. Hubrig**, Kaiser Aluminum & Chemical Sales; **Walter E. Keally**, American Steel & Wire Co.; **Fred W. Myers**, Pennsylvania State University; **Frank E. Scott**, U. S. Bureau of Mines.

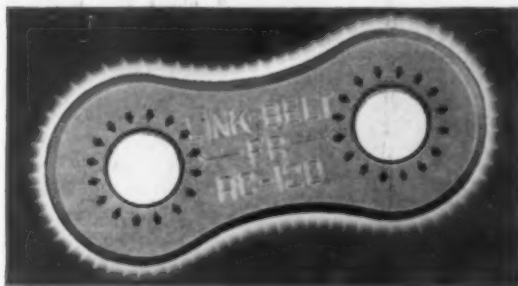
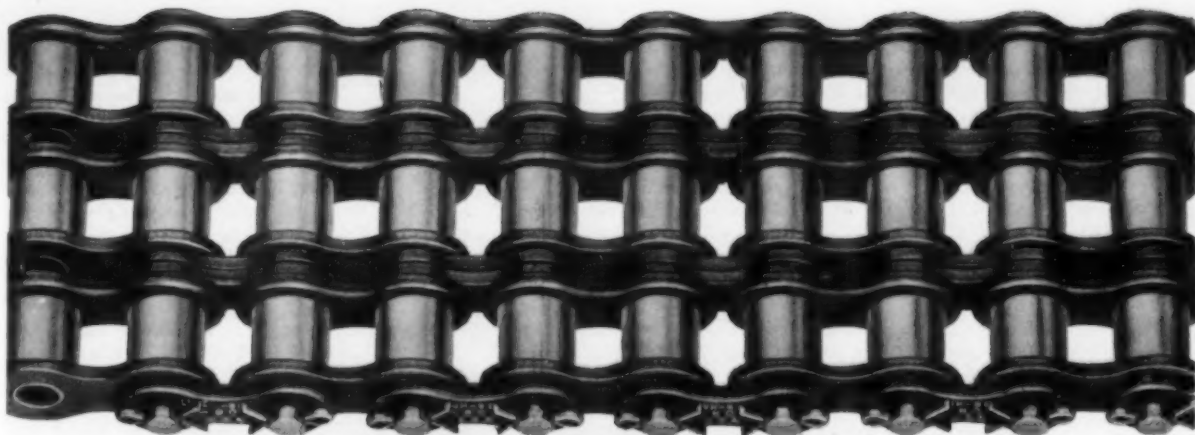
**Secretary-Treasurer—Alex E. Molinski**, supervisor of maintenance, Johnstown Div., Bethlehem Mines Corp., Johnstown, Pa.



**Fred R. Toothman**, appointed engineer of coal properties for the Chesapeake & Ohio Ry., is a native West Virginian with a distinguished naval record during World War II.

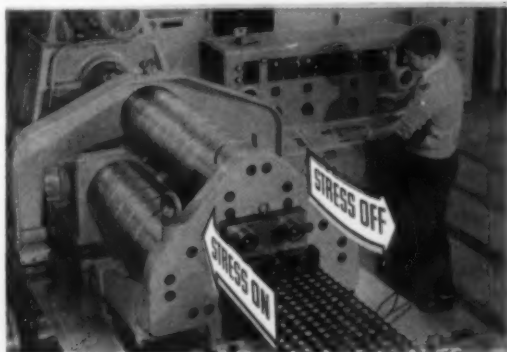
Born 1918 in Hepzibah, W. Va., he attended Victory High School in Clarksburg, W. Va., and the School of Mines at West Virginia University. In 1942 he entered the Navy as an Ensign and

**H. E. Mauck** has resigned as general superintendent of Olga Coal Co., Coalwood, W. Va., to become vice president in charge of operations of Freeman Mining Corp. He replaces F. E. Snarr, who passed away several months ago. Mr. Mauck was born in 1914 in Danville, Ill., and attended Danville public schools before going on to the University of Illinois. After Illinois, he attended Pennsylvania State University to obtain his B.S. in mining engineering. Before joining Olga Coal Co., he held positions of engineer trainee and mine superintendent with Pittsburgh Coal Co. At Olga he was first assistant to the president and became general superintendent in 1949.



Arrows indicate critical areas treated with compressive stresses to improve fatigue resistance.

# Fortified against fatigue



**65 TONS OF CYCLIC TENSION!** With this equipment—largest of its kind known to be in operation in roller chain testing—Link-Belt tests and rates roller chains. Rapid "stress-on, stress-off" action duplicates operating conditions at a greatly accelerated pace . . . proving over and over that Link-Belt chains are fortified against fatigue.

Link-Belt offers special FR<sup>®</sup> processed roller chain for applications involving repeated high-tensile loads

Jobs too rugged for standard roller chains are taken in stride by Link-Belt FR roller chain. Through its patented FR process, Link-Belt gives *greater dynamic strength* to the larger sizes of chain most likely to encounter severe cyclic loading. FR greatly raises the chain's endurance limit by compressing metal around pitch holes—the critical sidebar areas most vulnerable to fatigue failure.

The FR process results from the same design and metallurgical research that has produced many more "extras", all *standard* in Link-Belt roller chains. They include shot-peened rollers, close heat-treat control, lock-type bushings and others. For further details on Link-Belt roller chains, send for Book 2657.

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**BOOK 2657** has 154 pages of roller chain data. For your copy, contact your nearest Link-Belt office or authorized stock-carrying distributor. (See CHAINS in the yellow pages of your phone book.)

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## People in Coal (Continued)

served in the Solomon Islands where he was awarded a letter of commendation by Admiral Halsey.

Mr. Toothman, who reached the rank of Lieutenant Commander, returned after naval service to West Virginia University to complete his M.S.E.M. degree. He joined C&O in 1946 as a field engineer in the Coal Development Office, working until 1951, when he was granted a leave of absence to serve as assistant director, Equipment and Materials Div., of the Defense Solid Fuels Administration in

Washington during the Korean War. He returned to C&O in 1953 and was promoted to administrative assistant engineer in 1958.

Married to the former Nadine Bailey of Bridgeport, W. Va., Mr. Toothman is a past president of the Huntington Chapter, West Virginia Society of Professional Engineers, and a member of the executive committee of the Appalachian Section, AIME. He is a registered professional mining engineer in West Virginia and Kentucky and is chairman of the Youth Committee of the Railroad Community Committee.



**INLAND STEEL reports  
"33% reduction in haulage costs"**

**SOUND LIKE A GRAVY TRAIN?** Maybe so, but it's actually down-to-earth mine car trains that we're talking about.

Inland made exhaustive studies over a three year period... came to the sober conclusion that their mine car investment "would be returned in 2½ to 3 years."

The well loaded trip shown above is a part of the 526 additional cars purchased by Inland for its Wheelright Mine as a result of its experience with Differential cars in their Price #2 mine.

Standing out like a miners' lamp underground is the irrefu-

table, hard fact that for any given length, width and height mine car you can haul more tons of payload in a Differential than in any competitive make. Make us prove it!

It's the popular "Axless" truck design that makes the difference in Differential. Leaves more room within the car for revenue producing coal. Look into the Differential deal—it's sound as a dollar!



**SINCE 1915 PIONEERS IN HAULAGE EQUIPMENT**

**A. H. Truax and G. W. Traer**, both instrumental in founding the Truax-Traer Coal Co., retired July 30 as chairman of the board and chairman of the executive and finance committees, respectively. Both will continue to serve as directors. **M. L. Patton**, executive vice president in charge of sales, who became associated with Truax-Traer when the firm acquired its West Virginia properties in 1929, also announced his retirement.

**Clinton W. Thompson** has joined the staff of The Lorado Coal Mining Co., Lorado, W. Va., in the capacity of general superintendent. He will supervise the activities at Nos. 8 and 9 mines and development at No. 5. More recently a special representative for the Marathon Coal Bit Co., of Montgomery, W. Va., Mr. Thompson earlier was in charge of mining properties near Morgantown, W. Va., for the National Mines Corp., and before that was responsible for several mines at Webster Springs, W. Va., for the Pardee & Curtin Lumber Co. He early became a specialist in the installation and use of belt conveyors for mine transportation.

**Goodwyn Holmes** has been appointed president of the Long Branch Coal Corp., with headquarters at Charlotte, N. C. Prior to joining Long Branch Mr. Holmes had been associated with Appalachian Coals, Inc., Cincinnati, for a number of years, latterly as vice president.

**L. A. Brown**, assistant vice president, Eastern Gas & Fuel Associates, has been reelected secretary of the Pittsburgh (Pa.) Control of the Controllers Institute of America. Other coal men elected as directors of their local controls are **John E. Corder**, controller, Black Star Corp., Louisville, Ky.; and **John J. Sellers**, treasurer, New River & Pocahontas Consolidated Coal & Coke Co., Philadelphia.

**George D. Bellows** has been elected a vice president of the Paul Weir Co., Inc., consulting mining engineers, with principal offices in Chicago. During the past 2 yr. Mr. Bellows has been in charge of the Ferrous and Non-Ferrous Mining Dept. of the firm's organization in Korea, where it is supplying technical assistance to the Republic of Korea.

**James A. Williams** has been appointed director of the Div. of Mines & Minerals for the Dept. of Natural Resources, Alaska.

## Obituaries

**Leslie W. Householder**, retired vice



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## WILLISON COUPLERS

The Willison has only four moving parts.

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No need for men to go between cars to couple or uncouple.

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Coupler head and shank are one-piece steel casting with over 400,000 pound ultimate strength.

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Used on all types of mine cars and locomotives; with accessories, can couple with link-and-pin hitchings; can be used with cables on incline haulage or odd pulling requirements.

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NACO Steel Wheels

NACO Steel Links  
and Swivel Hitchings

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Quality . . . the best economy of all



## Another product of Sunoco research . . . a fire-resistant hydraulic fluid

The flame test, above, dramatizes the effectiveness of Sun's new fire-resistant hydraulic fluid. The wick in the conventional fluid burns readily; the wick in Sun's new fluid just can't be lighted.

MINESAFE, a water-in-oil emulsion, eliminates fire hazards . . . provides increased safety to personnel and equipment. At the same time, operators get the essential performance characteristics of a top-grade hydraulic oil—low rates of wear,

long service life, and protection against rust and corrosion.

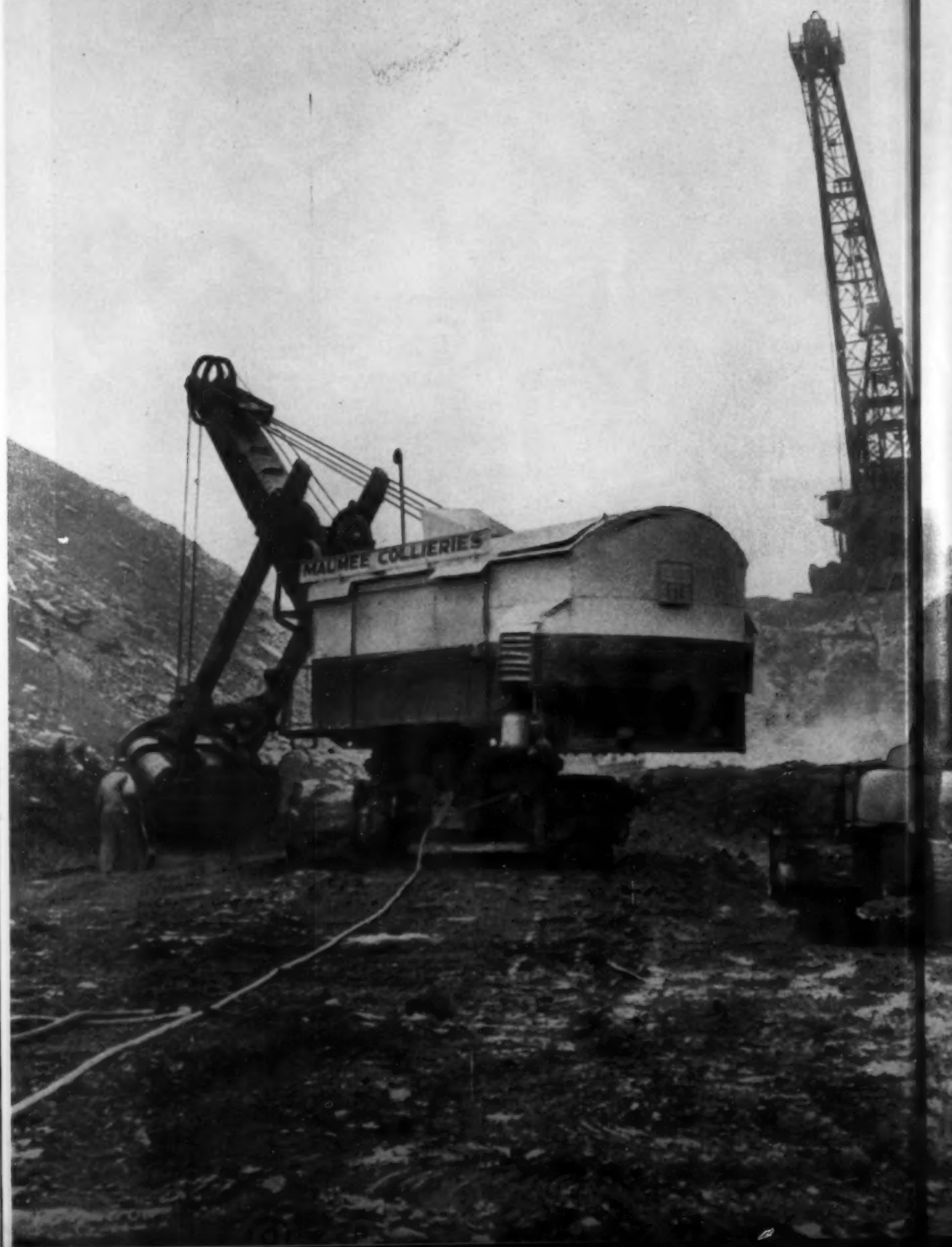
This combination of *quality* in engineering know-how, and *quality* in product, proves once again that *quality* in any sense is the best economy of all.

For 73 years Sunoco has meant quality right down the line. Today, this quality is found in more than 400 Sunoco industrial products. SUN OIL COMPANY, Phila. 3, Pa., Dept. MS. In Canada: Sun Oil Company Limited, Toronto and Montreal.


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At the Maumee Collieries in Indiana...

# **ANACONDA SHOVEL CABLE HAS A RECORD: 10 YEARS ON THE ROCK PILE!**

**Anaconda's SH-D Cable gives many years of dependable service in spite of heat, moisture, kinks, rocks and runovers!**

How many shovel cable hazards can you count in this picture from the Maumee Collieries? Rocks... moisture... kinks... danger of runovers—they're all there. Yet the first installation of Anaconda's rugged SH-D Shovel Cable has resisted them all—for 10 long years!

It's proof again of the way Anaconda's in-the-field experience with Shovel Cable pays off in a superior cable for you. The important knowledge gained from use and testing of SH-D Cable *on the job* in our own mines goes into the design and manufacture of Anaconda Shovel Cable.

For example, the insulation is Anaconda Butyl (AB). Nothing can beat it for withstanding ozone, heat and moisture. Patented rubber cores cushion the ground wires and help prevent breaks from kinks and runovers. SH-D has a neoprene jacket that is exceptionally tough and abrasion-resistant. And every design, every component has been job-tested—your assurance of superior quality and performance.

Call on the Man from Anaconda with your cable problems. Or see your local Anaconda distributor. For new descriptive Bulletin DM-5818, "Anaconda Security-flex Portable Cables for the Mining Industry," write: Anaconda Wire & Cable Co., 25 Broadway, New York 4, New York.

30212

◀ For a decade, the Anaconda SH-D Shovel Cable you see here has been giving dependable service for the Maumee Collieries, Jasonville, Indiana. Its many superior design features enable it to resist on-the-job hazards that would knock out ordinary shovel cables.

ASK THE MAN FROM  
**ANACONDA®**  
FOR SHOVEL CABLE

## Coal Abroad

**JAPAN**—Japan has been negotiating with Russia on the possibility of importing 800,000 to 1,000,000 tons of coking coal annually at C.I.F. \$13 to \$15 per ton. The Soviet price is lower than the price on coking coal presently being imported into Japan from the United States. The proposed amount is much larger than the 330,000 tons being imported in 1959 and would affect imports from the U.S. if

the deal were to be concluded, according to informed sources. The contract would be for 3 to 5 yr.

**ITALY**—A 320,000-kw, \$48 million thermoelectric power plant running on either fuel oil or coal is being built at Valle Grande near La Spezia by Societa Edison, giant Italian utility firm headquartered in Milan. Construction time is

estimated at 2 yr so that the power plant is expected to go into operation before the end of 1961.



**RESEARCHER** at the newly opened Warren Spring Laboratories of Britain's Dept. of Scientific and Industrial Research, studies sample of gas produced from coal. Efforts are aimed at developing an economic process for producing oil from coal. A pilot plant there already has an output of 70 to 100 Imperial gallons from about 2 long tons. Long-term hopes are to design a full-scale plant for a coal-mining area.

**ARGENTINA**—Representatives of the Yacimientos Carboniferos Fiscales, the Argentine state coal monopoly, announced the firm would cut planned 1959 output of 600,000 tons by 50%, owing to the abundant supply of natural gas coming from the oil development operations in Patagonia. YCF earlier this year predicted Argentine coal production from the Rio Turbio mines would reach 2 million tons by 1963, but this is now doubted by economists here.

**RUSSIA**—Three new coal mines now under construction in the Donets Basin are to deliver in ultimate tow-shift operation 10,000 metric tons of coking coal per day, according to a Soviet announcement. Hydro-monitor operation on 100 psi water pressure is to cut the coal from the seam. In this operation coal, water, and rock are funneled through special grooves to the shaft from where high-output pumps get the material to the surface.

**AUSTRIA**—A new Austrian twin-chain scraper flight conveyor has an hourly rated hauling capacity of 120 metric tons at a maximum hauling capacity of 200 metric tons, say reports. A 50-hp compressed-air turbo engine is used for the system, which was designed and produced by the firm of Vereinigte Oesterreichische Eisen- und Stahlwerke A.G."

(Continued on p 50)

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**to 5%**

**Yes, even less**

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to less than 5%, but also will do a fine job in recovering coal from slurry.

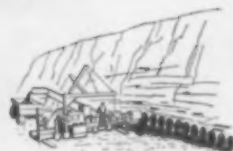
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## IN THE PIT



High-production, self-moving, McCarthy coal recovery drills cost less to buy and less to operate. Only a two-man crew required. No tractor needed. Augered coal costs less. See Salem Bulletin ST-59.



## OR UNDERGROUND



Underground coal recovery drill has separate power unit. Turns within own length. Drills to horizontal depth of 100 feet. Five-foot augers are recovered from first hole while second hole is drilled. Just a three-man crew. See Salem Bulletin AM-59.

Compact, fast, rugged unit drives air holes, manways, storage holes and conveyor runways ten times as fast as conventional methods. Drills from -45° to straight up. Separate power unit. See Salem Bulletin UD-59.



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You'll haul more tons per hour at lower cost...with



This revolutionary off-highway truck gives you highest output at lowest ownership and operating costs. You get these profit-making benefits because the all-new, fully-proven LeTourneau-Westinghouse Haulpak is built *specifically* for rugged, heavy-duty hauling. It is not a "beefed-up" highway truck ... nor does Haulpak have the maintenance problems common on ordinary haulers.

Notice, for example, Haulpak's rugged "V"-shaped body. This exclusive LW design gives you *bonus* yardage within a short wheelbase ... makes for easy loading ... and provides a low center of gravity for exceptional stability.

LW Haulpak's short, 130-inch wheelbase gives you unusual maneuverability (makes non-stop U-turn in area only 44'6" wide ... shortest turning radius of any big off-road truck). You spot, swing around, back up and dump *fast* ... you eliminate most maneuvering delays, complete faster cycles. You have "feather-touch" power-steer, too ... system is located high behind bumper, well protected from damage.

And, very important, time lost for maintaining your Haulpak is *practically* nil. It needs *no* daily lubrication. The entire Haulpak lubrication check — *needed only at 500-hr intervals* — consists of just 4 easily-reached grease fittings. In addition, LW Haulpak's various parts and assemblies — some of them tested and proved by *millions of hours* on LW Tournapulls® all over the world — are much stronger than those used on competitive haulers.

**22, 27, 32-ton sizes**

Ask us for detailed specifications on the size Haulpak that fits your needs. Available in 22, 27, and 32-ton sizes ... 290, 335, and 375 hp. Compare its features with any other truck in the industry ... you be the judge!

\*Trademark HP-2155-G-1

**Low loading height** — (only 10'1" on 32-ton size) and large top opening (14'5" x 11') makes it easy to load LW Haulpak fast, without spillage.



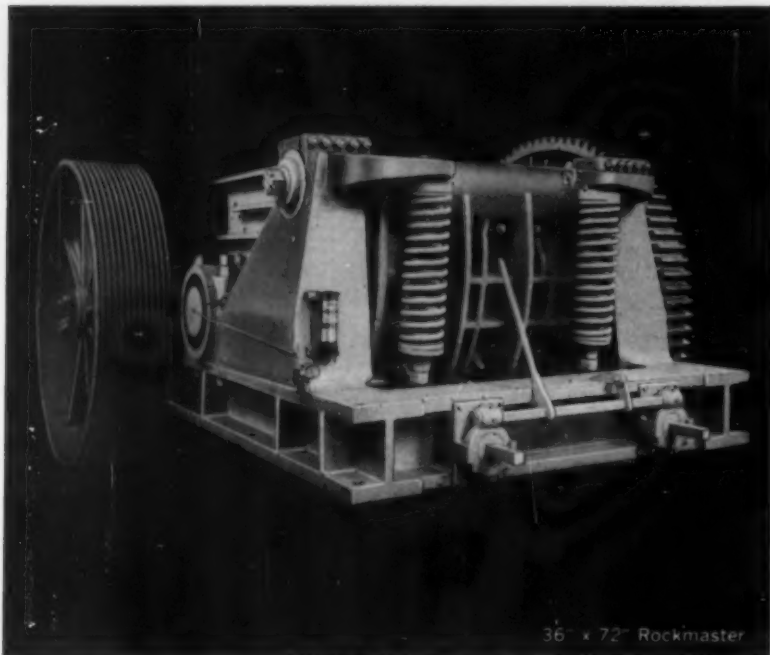
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## ROCKMASTERS

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### Soviet Progress

More and more money is apparently being spent in Russia to improve mining techniques and coal utilization as evidenced by the rash of new claims coming from Soviet sources of late. So many are the claims, indeed, that it is hard, say reporters, to tell which are authentic and which are wholly false or exaggerated.

Most recent claim is that of a "revolutionary" new coking method for the utilization of poor-grade coal. Leonid Saposhnikov, corresponding member, USSR Academy of Science, who is mainly responsible for the development of coke production from coal considered unusable for coking purposes, reports that the widespread application of the new (undisclosed) method will allow utilization of iron ores in areas where only ordinary type coal is found.

His experimental though industrial-size plant, built in Charow, has been operating for 2 yr using gas type coal and other low grades, producing coke of uniform hardness and shape by means of a continuous coking process, say the reports.

**New Machinery**—Improved machinery for the mining of coal seems to be getting the most attention. For example, some new types of hammers used at the work face are claimed by the "Pneumatika" enterprise of Leningrad. Each of the three types, say reports, is to improve the conditions of the miners and not primarily for higher output.

The first type is a coal pick hammer which has cold water piped to the work-end through a rubber hose. This fine spray, it is noted, completely abolishes the spreading of dust around the work face. The second hammer type operates on high vacuum. The rotary hammers have small holes along the drill-hammer shaft and a powerful vacuum sucks the coal dust into a collection tank.

**Plastic Props**—The Russians plan to replace all wooden, steel or reinforced concrete props with a new plastic type of prop now undergoing tests in the mines, according to reports. The plastic material, say the reports, is first made into thin strands, later processed and pressed into cylinders to resemble the structure of wood fibers. The cellular structure is similar to tree trunks and is claimed to have 3 times the mechanical properties of wood with lighter weight.

Not employing the roof-bolting method used extensively in the United States, the Russians hold the problem of pit props to be most important. About 5,592 mi of coal hauling shafts are said to be fitted with wood or metal props and moist high-temperature air in the shafts either rots the wood or corrodes the steel. Reinforced concrete, though not affected by humidity or temperature, is too heavy to employ with ease.



## Save money when replacing pit tractors...

switch to fast, rubber-tired tractors  
... handle twice the work at half the cost!

When modernizing your pit operations, don't overlook the savings you can make by replacing 2 or more slow-moving track-type tractors with a fast, rubber-tired tractor, to handle your scattered pit and road clean-up.

Check these important savings you can make with a modern, high-speed, 218-hp LeTourneau-Westinghouse Tournatractor®:

1. Between pit chores, rubber-tired tractor can handle haul-road maintenance and drainage problems... to keep your production units rolling fast and safely.
2. Mobile, 17.2-mph Tournatractor

quickly drives to new areas of operation... spends its time working instead of crawling.

3. It cleans up around plant area, dresses and maintains stockpiles.

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5. If winter snow is a problem, LW tractor with V-type snow plow, or with dozer blade, clears roads, loading and dumping areas — keeps pit operations open and safe in all kinds of weather.

Every tractor assignment — anywhere on your property — can be handled quickly and efficiently by

versatile Tournatractor. And, if your pit normally sidelines equipment during its off-season, this mobile LW tractor can be rented out to nearby contractors, counties, or municipalities. It's easy to keep Tournatractor busy all year long!

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Let us demonstrate a LeTourneau-Westinghouse Tournatractor in your pit. Write or phone for complete information. No obligation.

CT-2138-MQ-1



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

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Where quality is a habit



# Current Coal Patents

By: Oliver S. North

Props, especially for use in coal mines, B. Tebb and C. H. Perry (assigned to Mastabar Mining Equipment Co., Ltd., Hull, England), July 21, 1959. Design for a hydraulic prop which is especially suitable for use in coal mines where controlled roof collapse is practiced. Collapsing pressure can be selected by external adjustment of the prop. Initial release takes place upon minimum predetermined loading, and loading to cause subsequent release increases the load displacement until the value of the load becomes equal to the maximum load sustaining capacity of the prop. No. 2,895,454.

Hydraulic conveyor swing and take-up, C. B. Frelsen (assigned to Joy Mfg. Co., Pittsburgh, Pa), July 21, 1959. Improved fluid-operated take-up for an endless chain flight conveyor for automatically taking up any slack introduced into the conveyor chain as the swingable end portion of the conveyor is swung laterally. No. 2,895,591.

Flexible troughing roller assembly for belt conveyor, H. E. Smith (assigned to

Goodman Mfg. Co., Chicago, Ill.), July 21, 1959. Design for an improved two-bearing troughing roller assembly which is light in weight, low in cost, effective, readily repairable on the job, strong in tension, and extremely flexible, and which remains round in use. No. 2,895,594.

Sink and float solids separators, R. Teuteberg (assigned to Schüchtermann & Kremer-Baum A.G., für Aufbereitung, a corporation of Germany), July 14, 1959. Design for a coal sink-float separator which allows the use of a more coarsely granular weighting material in the heavy liquid suspension. The apparatus has an oscillating or swingable perforated plate which is partly submerged; feed coal is passed below the plate and the heavy liquid is fed over the plate. No. 2,894,629.

Belt conveyors, J. B. Long and J.C. Clay (assigned to The Long Co., Oak Hill, W. Va.), July 28, 1959. Design for a belt conveyor in which the conveying roller units of the load-bearing stretch of the belt are supported upon spaced flexible strands mounted upon floor-supported standards, wherein the

load-bearing stretch of the belt is positioned above the strands and standards. The hazard to men riding such a belt is less than normal belt riding. No. 2,896,774.

Mine vehicle, K. M. Skeens, July 28, 1959. Design for a coal hauler or shuttle car for use in thin seams, e. g., 24 to 27 in thick. The bottom doors are so mounted as to swing through arcs which allow the car to be drawn directly over a pit and the load dropped. No. 2,897,004.

Tension mechanism for extensible conveyor, J. W. Hardy (assigned to Goodman Mfg. Co., Chicago, Ill.), Aug. 4, 1959. Improved extensible belt conveyor of the type employing flexible strands for supporting the conveying reach, wherein the support strands are properly tensioned and tied off at intervals throughout the length thereof. No. 2,897,564.

Loader-bar, control tube, and coal loading machine, M. T. Coffman, Aug. 4, 1959. Design for a compact coal loading machine which may be progressively moved beneath a fractured cut for dislodging the material and delivering it to a conveyor for rapid removal. A loader bar is impulsed beneath the cut to deliver the coal to the conveyor. This

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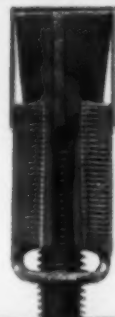
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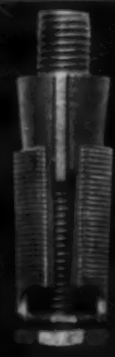
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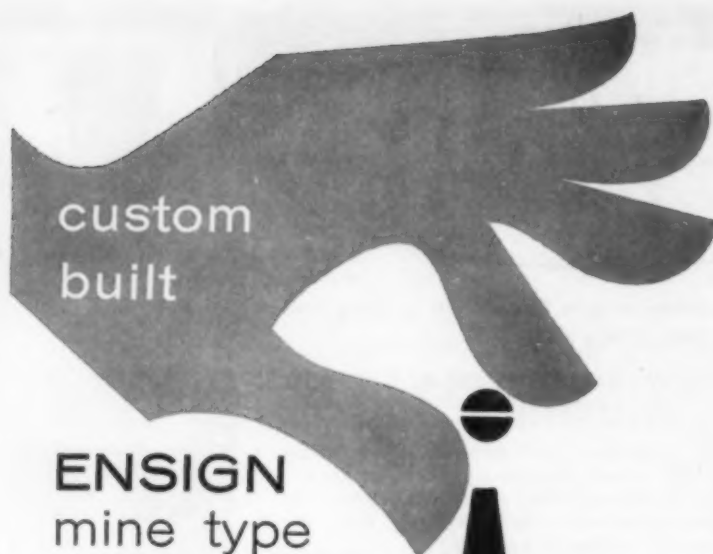
Two men can recover  
350 bolts per day by  
using it as follows . . .

Place a Jack alongside each of the first row of bolts closest to the face. Raise to the roof to provide temporary support. Remove bolts by hand or pneumatic wrench. Stand 25' or more away and pull on a rope attached to the Jack trip lever which collapses the Jack. Move Jack to position under the next row of bolts and proceed as previously.

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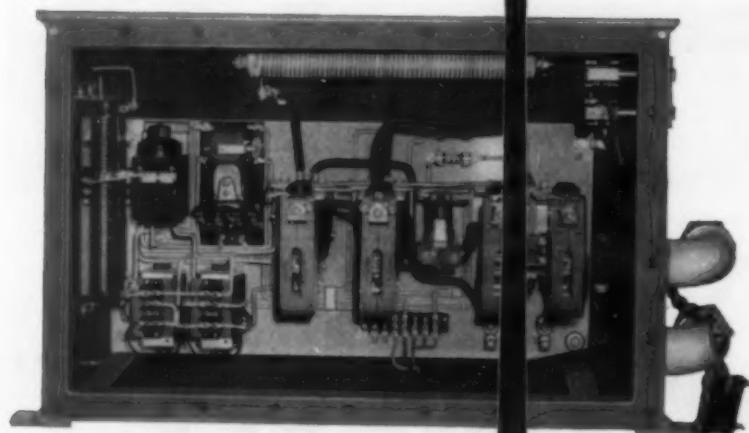


Photo illustrates Ensign Bulletin 5391 magnetic reduced voltage starter—250 Volt D.C.—3 points acceleration—non-reversing—Bureau of Mines explosion tested enclosure.

### features -

**ENSIGN type EJ**  
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timing relays

**ENSIGN intrinsically**  
safe relay



### Coal Patents (Continued)

machine is especially suitable for use in thin seams. No. 2,897,946.

Coal-cutters having cutter chains driven in tension, W. Gillespie (assigned to Mavor & Coulson Ltd., Bridgeton, Glasgow, Scotland), Aug. 4, 1959. Coal cutter of the type equipped with cutter chains working around a jib structure. The jib structure of this invention presents at its working front two superposed lengths of chains which are both pulled inwards by the sprocket wheels, and which therefore are both driven in tension. No. 2,898,098.

## New Books

### Industrial Relations

Glossary of Personnel Management and Industrial Relations Terms defines 300 critical terms in the fields of personnel management and industrial relations. This research product aims to cut down misunderstandings, litigations, waste of time in management-labor communications and to promote a growth of common understanding and acceptance in the language of the two fields. 39 pp. 5½x8½-in; paper. \$2. Research Div., Society for Advancement of Management, 74 Fifth Ave., New York 11, N.Y.

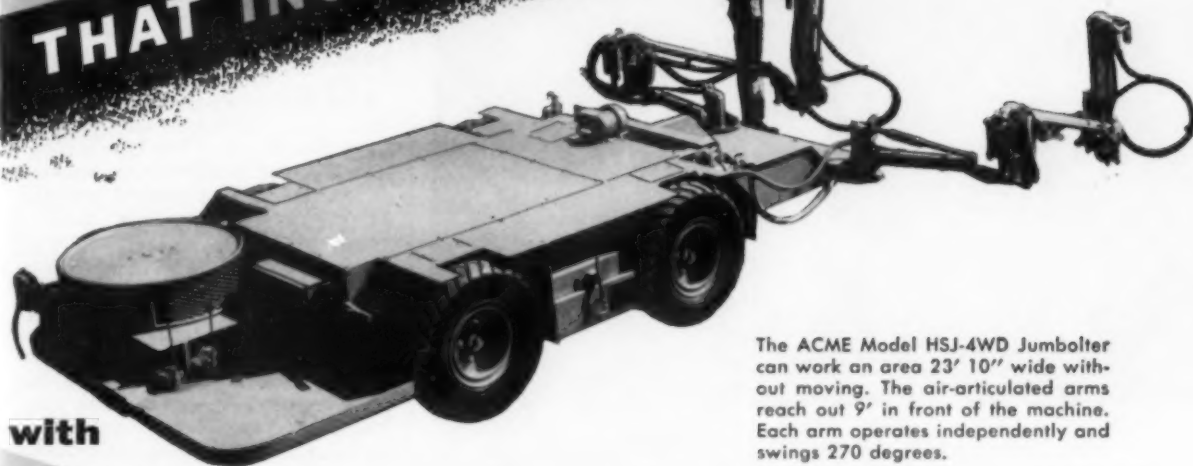
### Coal Service

Coal Service Directory consolidates in a single volume comprehensive information on coal production in the 12 major mining areas served by the New York Central R. R. The illustrated book was prepared by the railroad's coal sales department to serve as a handy reference for bulk consumers of coal. It includes data on mines, producers and seams. An individual map for each of the coal-producing areas features a rigid reference system to locate any mine at a glance. 91 pp. 8½x11-in; paper. New York Central R. R., 466 Lexington Ave., New York 17, N.Y.

### Mine Safety

Prevention of Accidents Due to Fires Underground in Coal Mines is a code of practice developed by a group of international mining experts at the request of the International Labor Office. The code is to serve as a guide for planning new mines and designing new equipment, and also for alteration or extension of existing mines or equipment. Major topics include fire-resistant construction, machinery and detecting fires. 4¾x7-in; paper. 48 pp. 50¢, International Labor Office, Washington Branch, 917 15th St., N. W., Washington 5, D. C.

**ROOF  
BOLTING  
THAT INCREASES PRODUCTION**



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**ACME**

**4 WHEEL DRIVE  
A. C. or D. C.**

**JUMBOLTER**

The ACME Model HSJ-4WD Jumbolter can work an area 23' 10" wide without moving. The air-articulated arms reach out 9' in front of the machine. Each arm operates independently and swings 270 degrees.

The versatile ACME Model HSJ-4WD Jumbolter, equipped with tractor-type 4 WHEEL DRIVE, insures minimum turning radius. Left hand and right hand wheels are integrated units. By reversing the wheels on one side while driving forward on the other side the ACME JUMBOLTER will turn in its own approximate diagonal.

This unit, now successfully operating under a variety of conditions, permits bolting in a wide flexible pattern from 8 to 10 feet back of the working face.



**An Easy Way to SAVE DOLLARS  
on Your Air Supply**

ACME'S new dust collector shut-off valve stops the operation of the dust collector when the stopers are idle between steel changes, etc. Controlled from the throttle valve of the stoper this simple, mechanical, fully automatic valve synchronizes the operation of the drill and the dust collector. It can be easily installed on your present Le Roi dust collecting system and will substantially lower operator fatigue by eliminating unnecessary dust collector noise. Designated the Model APC-77, the valve is modest in cost.



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HUNTINGTON, WEST VIRGINIA

WAREHOUSE AND SALES OFFICE  
MORGANTOWN, W. VA.

REPRESENTATIVES IN PRINCIPAL  
MINING AREAS



When results are compared, Austin Apcomite proves to be more economical to use than on-the-job ammonium nitrate mixes. Besides producing greater explosive power per foot of loaded blast hole, it combines the low initial cost features of processed ammonium nitrates with the handling ease and controlled shooting of regular explosives.

Field tested for 3 years, Apcomite is ready for loading in vertical or horizontal holes—ready to shoot. Each tube has a primer in its nose . . . requires no special priming. Because it is always manufactured under the same uniform conditions, Apcomite can be used for controlled shooting not possible with on-the-job ammonium nitrate mixes.

## 2 TYPES MEET ALL CONDITIONS

Apcomite 17 and Apcomite 20A incorporate specially-processed ammonium nitrate packaged in 23G tubes of 5" and larger diameters. While they are basically the same, No. 17 is for all normal usage while No. 20A, with its greater density, is for wet holes.

Austin also produces Austinite 15, a controlled ammonium nitrate mixture furnished in polyethylene-lined burlap bags. Likewise available in bulk bags of 50, 80 and 100 lbs.

## 7 REASONS FOR USING APCOMITE

- low final cost provided by greater explosive power per foot of loaded blast hole
- convenience . . . eliminates most shipping, storage, mixing and materials handling problems
- no special priming needed . . . primer in nose
- packaged in 23G tubes that are easy to handle and load
- uniformly manufactured . . . no chance of improper mixing
- permits controlled shooting
- adaptable to vertical or horizontal holes

For complete details on how Apcomite can improve your operations, call your Austin representative today.

A-401A



**AUSTIN**  
POWDER COMPANY  
CLEVELAND 13, OHIO

explosives ♦ ammonium nitrates ♦ primers ♦ detonating fuse  
permissibles ♦ blasting supplies ♦ AP drill heads and bits ♦ mine tools

## Preparation Facilities

**Hi-Hat Elkhorn Mining Co., Hi-Hat, Ky.**—Contract closed with Kanawha Mfg. Co. for a Kanawha-Belknap calcium chloride washer with 30 tph capacity of 8x4 coal.

**Amherst Fuel Co., Fanco, W. Va.**—Contract closed with Kanawha Mfg. Co. for steel structures and installation of Raymond flash dryer.

**Lake Superior Coal Co., Superior, W. Va.**—Contract closed with Kanawha Mfg. Co. for American Air Filter Type W Rotoclone Dynamic Precipitator to augment present dry dust collector; capacity, 54,000 cfm.

**Crozer Coal & Land Co., Dott, W. Va.**—Contract closed with Kanawha Mfg. Co. for Reineveld 36-in centrifugal dryer for 1/4x0 coal.

**Boone County Coal Corp., Monclo, W. Va.**—Contract closed with Kanawha Mfg. Co. for waste water disposal system consisting of a steel 15,000-gal plant overflow sump with related sluices, piping and pump circuit to deliver to lagoons.

**Armco Steel Corp., Montcoal, W. Va.**—Contract closed with Kanawha Mfg. Co. for remodeling of existing head house equipment and structure to permit use of 8 wheel cars, including rotary dump, trip feeder, dump hopper, wiring and concrete work.

**Nassau Coal Co., Pageton, W. Va.**—Contract closed with Kanawha Mfg. Co. for retreatment system for 3/4x0 plant refuse consisting of single cell ORC jig, dewatering vibrator and 2 8-in H & P cyclones for water clarification; capacity, 8 to 10 tph raw feed.

**Russell Fork Coal Co., Mikegrady, Ky.**—Contract closed with Kanawha Mfg. Co. for water clarification circuit consisting of 3 14-in H & P cyclones and 12 8-in H&P cyclones together with necessary pumps, sumps and piping.

**Island Creek Coal Co., Elk Creek mine, Emmett, W. Va.**—Contract closed with Kanawha Mfg. Co. for water clarification system consisting of 14-in cyclones, flocculating circuit, 70 ft x 0 dia. Dorr thickener and 10 ft 6 in x 8 disc American disc filter. Solids recovered to refuse 16 tph.

**Carbon Fuel Co., Mine No. 9, Carbon W. Va.**—Contract closed with Kanawha Mfg. Co. for Reineveld 36-in centrifugal dryer.

**United States Steel Corp., No. 2 plant, Wilcoe, W. Va.**—Contract closed with



Kanawha Mfg. Co. for new head house equipment including positive drive rotary dump, trip feeder and car stops, Traylor electric feeders, Rock-Master crusher and belt conveyors. Capacity, 1,200 tph.

Eastern Gas & Fuel Associates, Whar-ton No. 2 mine, Barrett, W. Va.—Contract closed with Kanawha Mfg. Co. for storage bins and electric feeders replacing present main shakers to deliver coal to parallel jig washing facilities.

Savitske Bros., Mt. Carmel, Pa.—Contract closed with Western Machinery Co. for Wemco HMS mobile mill to handle 65 tph of 27/16x3/32 coal.

Sekora Corp., Gibsonia, Pa.—Contract closed with The Jeffrey Mfg. Co. for No. 100 unit washery, to handle 70 tph of 5x0 coal.

Clinchfield Coal Co., Moss No. 3 cleaning plant, Clinchfield, W. Va.—Contract closed with Western Machinery Co. for Wemco Fagergren froth flotation equipment to treat 160-180 tph 35x0 coal. Scheduled completion, Oct., 1959.

### Bituminous Output

YEAR TO DATE	PRODUCTION
August 15, 1959 .....	247,821,000
August 16, 1958 .....	238,640,000
1959 output 3.8% ahead of 1958.	
A month earlier output was 6.1% ahead of 1958.	
WEEK ENDING	PRODUCTION
August 15, 1959 .....	7,145,000
August 16, 1958 .....	8,045,000

### Anthracite Output

YEAR TO DATE	PRODUCTION
August 15, 1959 .....	11,694,000
August 16, 1958 .....	12,763,000
1959 output 8.4% behind 1958.	
A month earlier output was 7.4% behind 1958.	
WEEK ENDING	PRODUCTION
August 15, 1959 .....	341,000
August 16, 1958 .....	397,000

### Earnings (6 mo. to June)

#### Consolidation Coal Co.

	Net Sales	Net Inc.
59'	145,643,522	10,263,367
58'	131,356,705	7,140,202

#### Island Creek Coal Co.

	Net Sales	Net Inc.
59'	52,847,365	2,242,653
58'	41,322,153	1,855,874

#### Peabody Coal Co.

	Net Sales	Net Inc.
59'	49,817,109	5,356,924
58'	46,066,501	4,522,822



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**17 TON  
PULL**

TO BREAK THIS

**FLEXCO®**

**CONVEYOR BELT  
SPLICE!**

**MORE THAN 3 TIMES  
THE STRESS PLACED ON  
MOST OPERATIONAL  
BELTS!**

Tests such as this, using belts of various sizes and construction, are part of Flexible's continual effort to improve fastener design and performance.

FLEXCO—THE PREFERRED FASTENER BY BELT MAINTENANCE CREWS! Holding power . . . ease of application . . . wearability—thoroughly tested before they ever reach the user.

### QUALITY FEATURES OF THE FLEXCO DESIGN . . .

Plates have special cupped ends on top and bottom . . . distribute the strain over entire plate area.



Teeth are spaced for best holding action. Precision-made bolts and nuts.

**FOR SPLICING, and REPAIRING  
RIPS and TEARS . . . ON NEW  
and WORN BELTS!**

(Full details on this Test available on request)

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*Flexible* **STEEL LACING COMPANY**

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CHICAGO 44, ILLINOIS

# COMPARE



## ...and you'll buy BUCYRUS-ERIE

### compare output

Watch the "slicing action" lip take a faster bite, regardless of material . . . watch the tapered basket fill smooth and fast . . . watch it ride through the swing, smooth and even without bobbing and spilling . . . and watch the high-speed dump made possible by a clean inside design and high arch!

### compare economy

Ask others about long-life Bucyrus-Erie buckets! BECOLOY — a specially developed Bucyrus-Erie alloy — not only makes the buckets lighter, but adds great strength and wearing ability with higher impact resistance.

Your Bucyrus-Erie distributor will give you complete information on the complete line, all types, including solid and perforated; light, medium and heavy-duty. Call him today, or write Bucyrus-Erie Co., South Milwaukee, Wisconsin, Dept. 1R.

**BUCYRUS  
ERIE**

**Bullds Better Equipment**

### Meetings

First Biennial West Virginia Mining & Industrial Show, sponsored by the Charleston Chamber of Commerce, Sept. 23-25—Charleston, W. Va.

Exploration Drilling Symposium annual meeting, Oct. 8-10—Penn State University, University Park, Pa. Sponsored by mining departments of Penn State, Colorado School of Mines and the University of Minnesota.

AIME-ASME Joint Solid Fuels Conference, Oct. 27-29—Netherland-Hilton Hotel, Cincinnati, Ohio.

West Virginia Coal Mining Institute fall meeting sponsored jointly by the Central Appalachian Section, AIME, Oct. 30 and 31—Greenbrier Hotel, White Sulphur Springs, W. Va.

Meeting of Pittsburgh Section of American Institute of Mining, Metallurgical & Petroleum Engineers and Pittsburgh Section of National Open Hearth Committee, Nov. 6, Penn-Sheraton Hotel, Pittsburgh, Pa.

American Mining Congress, Coal Division Conference, November 13—Penn-Sheraton Hotel, Pittsburgh, Pa.

Fifth Symposium on Mining Research treating themes on ammonium nitrate explosives, field performance and safety, Nov. 19 and 20—Missouri School of Mines, Rolla, Mo.

Coal Mining Institute of America 73rd annual meeting, Dec. 3 and 4—Penn-Sheraton Hotel, Pittsburgh, Pa.

American Institute of Mining, Metallurgical & Petroleum Engineers, Inc., annual meeting, Feb. 14-18, 1960—New York, N.Y.

The Mining Electro-Mechanical Maintenance Association, 7th annual meeting, Sept. 26—Summit Hotel, Union town, Pa. Themes include Maintenance Control, presented by W. J. Marsh, Supt., District Maintenance, U.S. Steel Corp.

National First Aid & Mine Rescue Contest, Oct. 5-7—Buffalo, N. Y.

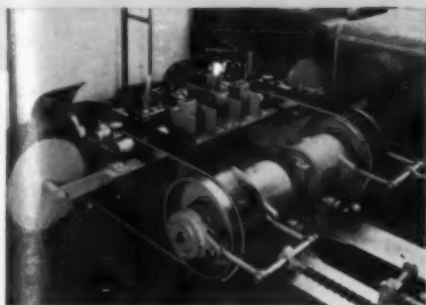
Illinois Mining Institute, Oct. 16—Springfield, Ill.

National Safety Congress, Coal Mining Section, Oct. 19-21—Chicago, Ill. Subjects for discussion include the duties of the foreman, the block retreat system, dust collection and degasification of coal beds.

American Institute of Electrical Engineers, Mining Section, Oct. 15—Morrison Hotel, Chicago, Ill.

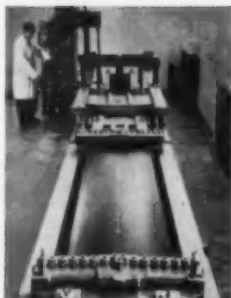
# Supreme in mining service

- for highest strength
- for lighter weight
- for longer life



Impartial tests for edge-wear show Scandura far ahead in endurance.

Tensile and impact tests constantly check Scandura for superior strength in service.



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Service Company**



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## Scandura

GOLD LINE

### PVC MINE BELTING

Scandura PVC Mine Belting surpasses every standard heretofore accepted for mine conveyor belts—in the laboratory, in the mine, and in point-by-point comparison with other materials. Safe Scandura PVC (Fire Resistant U.S.B.M. 28-1) is stronger because of unique, solid-woven nylon carcass construction—lighter, more flexible, amazingly long-lived with its exclusive PVC impregnation and surface cushions. Find for yourself how superbly Scandura resists wear, mechanical damage, moisture and abuse—install a length in your present system, and compare!

Manufactured at CHARLOTTE, NORTH CAROLINA by SCANDINAVIA BELTING CO.

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KY.-VA. DIVISION Jenkins, Ky.	MOUNTAINEER DIVISION Morgantown, W. Va.	WESTERN KY. DIVISION Madisonville, Ky.
		WHITEMAN DIVISION Indiana, Pa.

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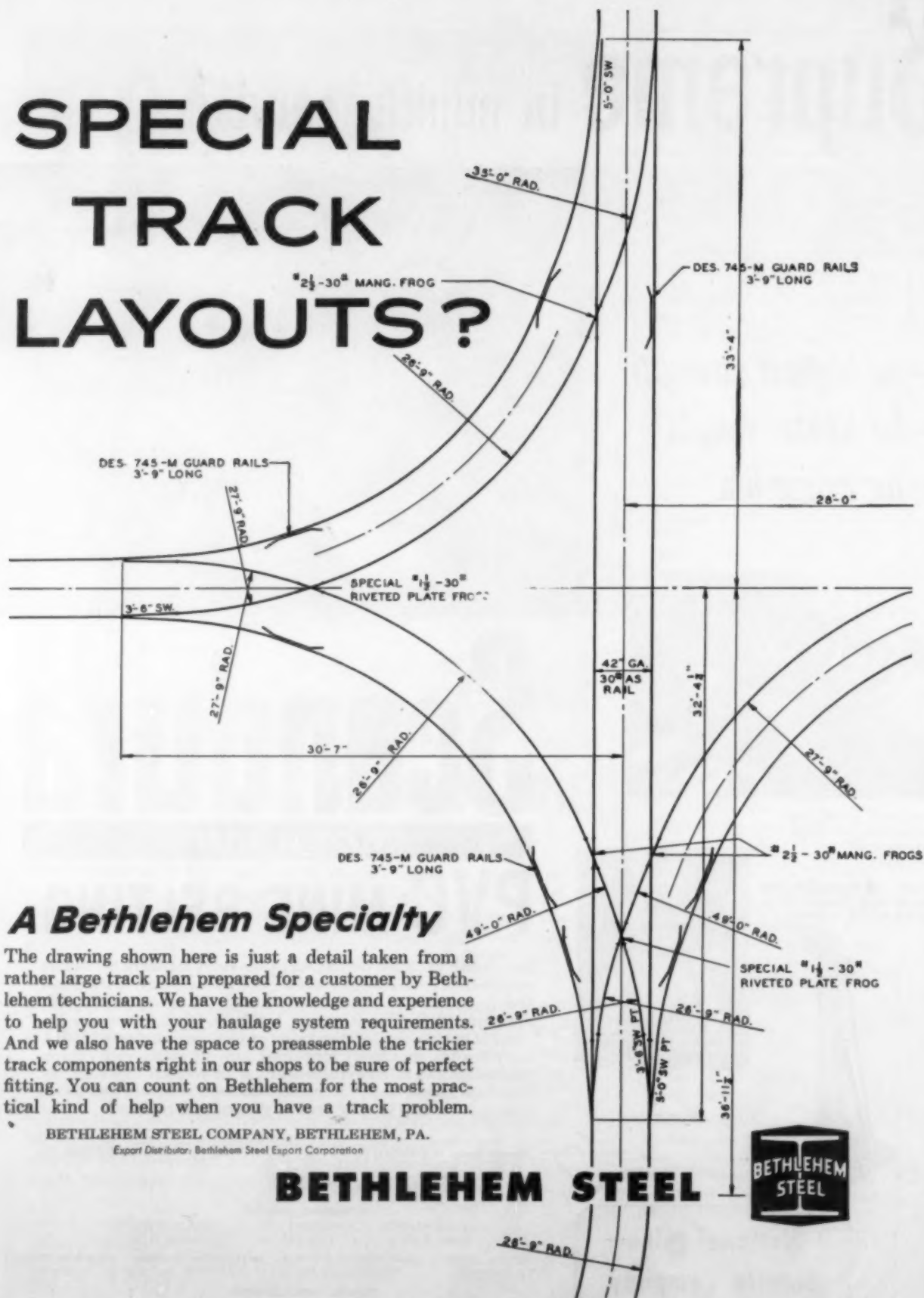
ASHLAND DIVISION Ashland, Ky.	CLARKSON DIVISION Nashville, Ill.	GREENSBURG DIVISION Greensburg, Pa.
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#### IN CANADA:

NATIONAL MINE SERVICE (CANADA) LIMITED  
Elliot Lake, Ontario



# SPECIAL TRACK LAYOUTS?



## A Bethlehem Specialty

The drawing shown here is just a detail taken from a rather large track plan prepared for a customer by Bethlehem technicians. We have the knowledge and experience to help you with your haulage system requirements. And we also have the space to preassemble the trickier track components right in our shops to be sure of perfect fitting. You can count on Bethlehem for the most practical kind of help when you have a track problem.

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coal



# DENVER

## COAL RECOVERY SYSTEMS

**Many Coal Preparation Plants  
Are Turning Waste Into  
Profits and at the  
same time . . .**

- (1) Recover marketable fines from waste water
- (2) Remove solids from washery waste and simplify disposal
- (3) Reclaim water in a closed water system

### **Compare This Example To Your Own Coal Preparation Plant:**

- (A) 1,000 G.P.M. WASHERY WATER IS SENT TO WASTE.
- (B) WASTE WATER CONTAINS 10% SOLIDS AT 20% ASH.
- (C) SOLIDS REPRESENT 26 TONS PER HOUR AND CONTAINS 84% COAL THAT RUNS 5% ASH.

All washery solids (-28 mesh x 0) are sent to a simple Denver Coal Recovery System which, for this capacity, costs about \$86,000 to \$90,000, plus approximately \$64,000 to \$100,000 for installation. (Estimated total approximately \$150,000 to \$200,000.)

Ash in solids, reduced by Denver "Sub-A" Coal Flotation from 20% to 5%, is blended with coarse coal.

Efficiency of system is approximately 92% and produces some 20 tons per hour of 5% ash coal.

Solids in refuse effluent are dewatered to approximately 40% moisture and conveyed to waste.

Clear water overflow is recycled to plant. Efficiency of closed water system requires only approximately 42 g.p.m. make-up water to replace water lost in clean coal and dewatered refuse.

Total coal fines recovered: 20 tons per hour (280 tons per 14 hr. day) @ \$5.00 per ton yields \$7000 per 5 day week or \$350,000.00 per year.

Operating personnel, overhead and maintenance are low.

The increased coal recovery from the fines should pay for this equipment and installation in less than six months and will accomplish these objectives:

- (1) Recover Clean Coal Fines
- (2) Remove solids from washery wastes and simplify disposal
- (3) Reclaim water and close plant water system.

DENVER Equipment Company can supply you a complete, centralized service on Coal Recovery Systems. Estimates and projections based on reliable laboratory test information are available without cost to you. We invite you to use our experience in the fine coal recovery field. Write today!

*"The firm that makes its friends happier, healthier and wealthier"*

## **DENVER EQUIPMENT COMPANY**

DENVER 17, COLORADO Phone CHerry 4-4466 1400 SEVENTEENTH ST.



# **HIGH SPEED DUMPING** through full 360° turn with the **NOLAN** ROTARY CAR DUMPER



**Moves coal faster, safer  
MORE PROFITABLY!**

## **Features:**

- Fully Automatic with Selective Manual Control
- Designed for Today's High Capacity Mine Car
- Gear Driven through Flame Hardened Gears
- Complete with Base Frame, Dump Sheets, and Liner Plates
- Anti-friction Bearings Throughout
- Wide Faced Dump Rings of Special Alloy Steel
- Equipped with Nolan Patented Cushioned Rail Aligning Stop
- Embodies 50 years Experience in Mine Car Dumping and Control

## **WRITE FOR FREE CATALOG**

Illustrating and describing complete NOLAN line of Mine Car Dumping and Control Equipment



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**THE NOLAN COMPANY**  
106 Pennsylvania St., Sewardston, Ohio



ARTIST'S CONCEPTION of first American-made coal plant to be built in India. Raw coal from 26 different mines will be blended for washing.

## **U.S. Cleaning Plant for India To Produce Coking and Fuel Coals**

THE FIRST American-made coal preparation plant in India, being designed and built by McNally Pittsburg Mfg. Corp., Pittsburg, Kan., will produce both coking coal and power-generation fuel<sup>1</sup> for Hindustan Steel (Private) Ltd., an agency of the Indian government. The plant, which is scheduled for completion in 1962, will be situated in the Jharia coalfields in the state of Bihar, about 125 mi inland from the Calcutta industrial center. Actual construction has been subcontracted by McNally Pittsburg to Asiatic Oxygen & Acetylene Co., Calcutta.

Essential functions of the new plant involve crushing, blending, washing, drying and loading of coal of differing characteristics from 26 relatively small mines. In order to produce two uniform finished products—coking coal and fuel coal—extensive raw-coal blending facilities are being provided. Blended and crushed raw coal is to be introduced into two washing circuits. In each of the two circuits coal will first be washed in McNally-Pittsburg Automatic Baum jigs to make a first separation at approximately 1.75 sp gr. Secondary washing at lower gravity will be done in McNally-Tromp dense-media washers. Each of the circuits will handle 300 tph (metric). Operation at 16 hr per day is planned for 300 days per yr.

Extensive laboratory facilities for achieving maximum quality of the finished products have been designed for the plant. Among the numerous design problems was India's scarcity of water.

The plant will be erected near the Damodar River. Although this river is usually dry, water will be pumped through a filtration system from below the river bed. After being used in the washing process the water will be recovered and stored in settling basins to be recirculated as needed.

Washed 1/4x0 fine coal will be dried in four centrifugal dryers, after which it will be recombined with other products in blending bins for railroad loading. Extensive water-clarification circuits have been included because of the shortage of water, and the design is such that flotation equipment can be accommodated in the event that washing of extreme fines later becomes a necessity.

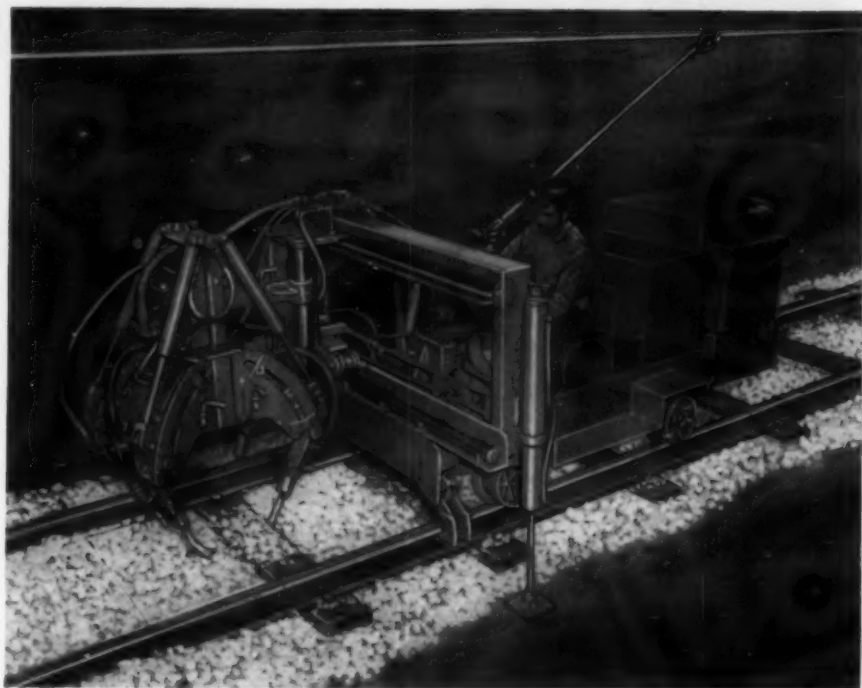
The entire system is under rigid control, with sampling points and scales installed as governing units. In addition to the laboratory there will also be a large shop suitable for making the plant independent of outside maintenance services.

Negotiation of the Indian contract was conducted by Lyle Stewart, treasurer of McNally Pittsburg, who has been in India on the project for nearly 2 yr. R. C. Woodhead and C. W. Waterman of McNally Pittsburg have spent considerable time in India, working on the technical aspects. McNally Pittsburg has built plants in all major coalfields of the world, outside of Russia, and has recently formed a subsidiary, McNally Pittsburg International, to undertake prime contracts for preparation plants outside the United States.

# **A Fletcher MINE TRACK TAMPER**

**CAN CUT  
LABOR  
COSTS  
90%**

**on Your  
Track Tamping  
and  
Leveling Work**



## **A New Cost-Cutting Machine From Industry's Largest Manufacturer of Roof Bolting Drills!**

Higher speeds, bigger mine cars, heavier locomotives all demand better track — and *better maintenance* — for economical mainline haulage. The FLETCHER Track Tamper can produce the level, solid trackage you need—and pay for itself in an unbelievably short time by allowing a two-man crew to do SIX TIMES the work a five-man crew used to do.

With built-in hydraulic track clamps and leveling jacks, exact grade or bank can be established. The sliding tamper head with four

special impact tools then solidifies the ballast under the ties with a combination of sharp blows and orbital thrust. In sixty seconds one tie is done and the machine moves on to the next.

Write or call for literature on how to save money with the new FLETCHER Mine Track Tamper.

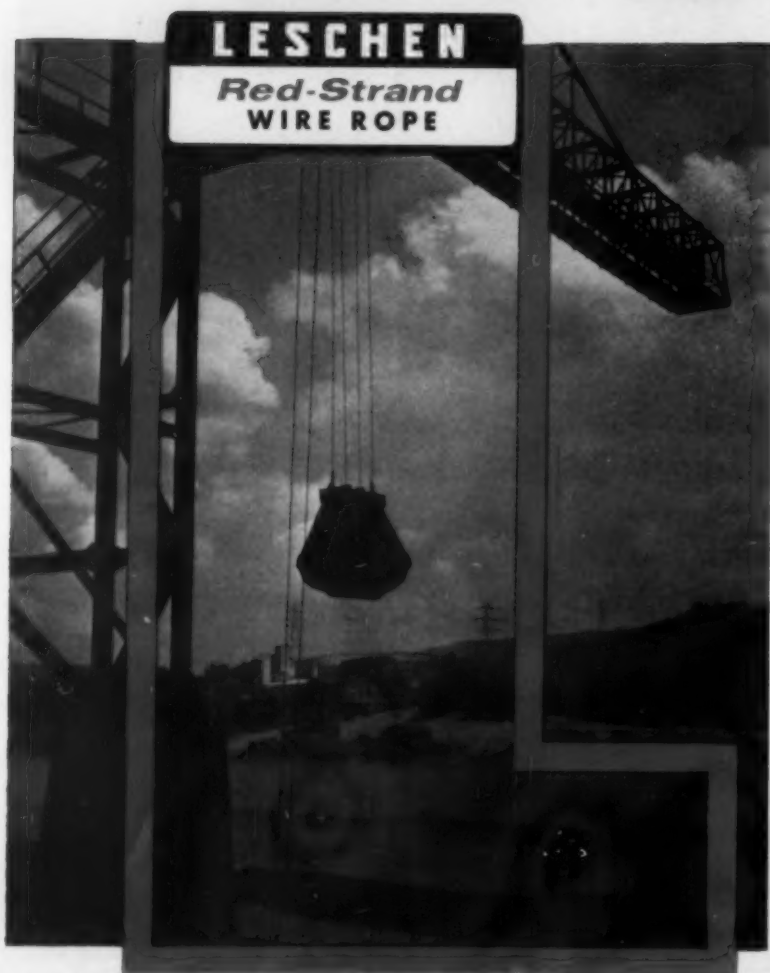


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When the load is on the clam shell, you'll be glad you rigged with Leschen—the wire rope that's the same top quality in every foot of every reel. At Leschen there are new machines with exclusive new continuous-flow technique. Try Leschen

Red-Strand Wire Rope. Its uniform quality makes your operation safer, your replacement time farther in the future.

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## News Roundup (Continued)

than 250,000 tons of coal during 1958.

Two of the largest rail mines in Harlan County, Ky., have signed contracts with the United Mine Workers, according to Cloyd McDowell, president of the Harlan County Coal Operators Association.

They are Harlan Fuel Co., Yancey, and High Splint Coal Co., Highsplint. The two Kentucky firms employ about 300 men. The new contract calls for \$24.25 a day wage scale, Mr. McDowell said. Though idled by strikes for over 5 mo, Harlan County has not been subject to the violence which occurred in the eastern Kentucky coal fields.

Pittsburgh Coal Co., Div. of Consolidation Coal Co., has announced that its annual scholarship awards have been won by Regis Smith of McDonald, Pa., and Vernon Smith of Canonsburg, Pa.

Pittsburgh Coal scholarships are given each year to 2 top-ranking seniors from the area who plan to continue their education in the field of mining, electrical or mechanical engineering.

Construction of a wheel excavator for the River King mine of the Peabody Coal Co., Freeburg, Ill., is now under way at shops of the Bucyrus-Erie Co., which recently acquired worldwide rights to the machine pioneered by Frank F. Kolbe, president, United Electric Coal Cos. and used at three of the company's properties. A Bucyrus-Erie-built wheel is now in service at the Flatt mine of the Truax-Traer Coal Co. also.

## Utilization

Ways of using the lignite of North Dakota in producing an economically marketable product from the nonmagnetic taconite ores of Minnesota will be explored in the next 2 yr under the terms of a contract between the University of North Dakota and the Great Northern Ry. Beginning of the lignite program last month marked the second step in a 5-yr program of marrying the two resources, the first being the signing of a contract in 1956 with the universities of Minnesota and North Dakota aimed at developing a nonmagnetic taconite process.

A British manufacturer will soon begin to commercialize the BCR Coal-Pak automatic packaged steam generator in the British Isles. Clayton & Son, Ltd., of England, and Bituminous Coal Research recently reached the necessary agreement. Under this agreement Clayton will manufacture complete BCR



# FLAME GOES OUT AT ONCE

## in test of Thermoid Thermocoal Conveyor Belting

The test? U. S. Bureau of Mines Flame Test, designation U. S. B. M. 28-11.

The material? Thermoid-Quaker *Thermocoal* Conveyor Belting with fire-resistant, flame-retardant neoprene cover and cotton-nylon reinforcement.

The requirements? No more than one minute of burning after the belt is ignited.

The results? The flame went out *immediately* on *Thermocoal* belting. Afterglow disappeared in *one-third* the permitted time.

Underground safety is just one of the features of *Thermocoal* conveyor belting U. S. B. M. 28-11. It is light in weight and extremely flexible, yet tough enough to take shock, impact, and the abrasive wear of heavy, jagged loads.

Get safety, service, and strength for your mine's belting. Call your Thermoid industrial distributor for full information, and for valuable assistance on all problems involving industrial rubber products. Or write today to *Thermoid Division, H. K. Porter Company, Inc., Tacony and Comly Streets, Philadelphia 24, Pa.*

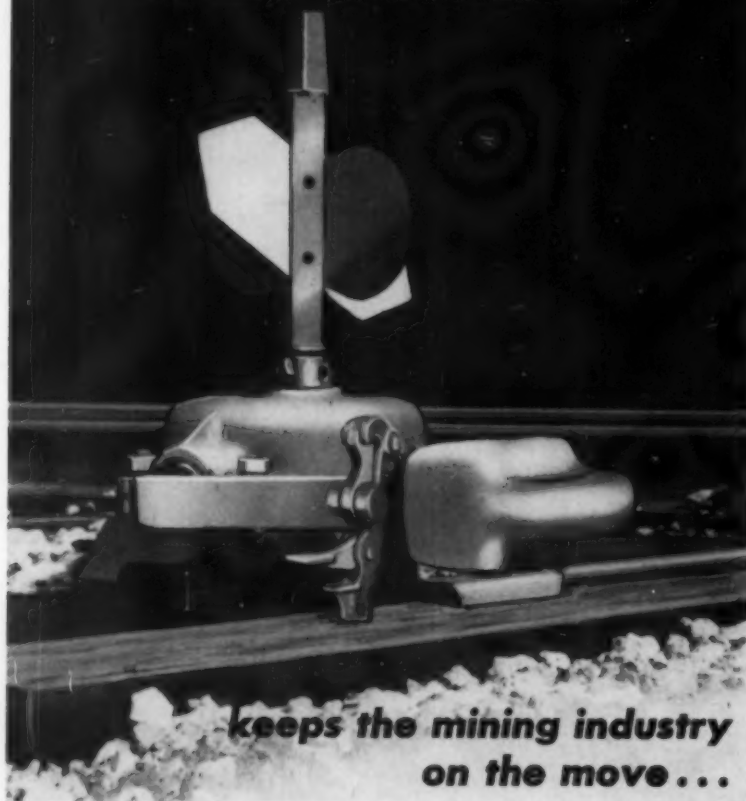
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**keeps the mining industry  
on the move...**

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write Connors Steel Division, H. K. Porter Company, Inc.,  
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## News Roundup (Continued)

package boilers of various sizes and capacities up to 1,500 sq ft of heating surface.

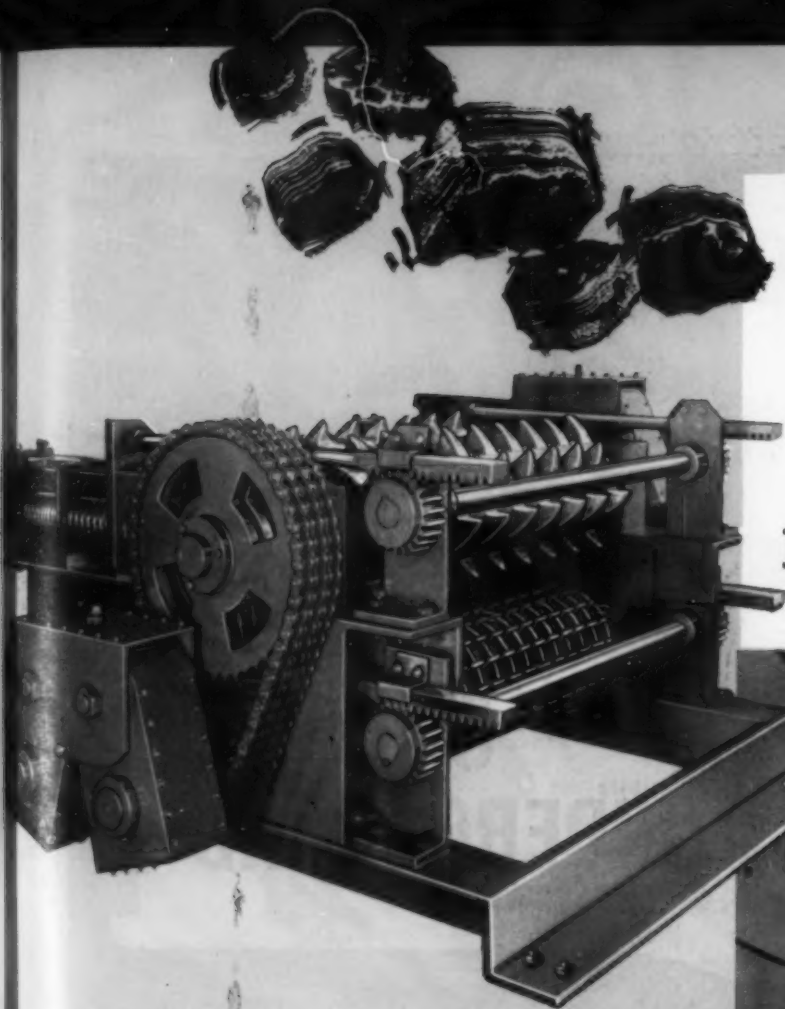
Potential applications of radioisotopes to the mining, transportation, storage and use of coal will be explored between now and early 1960 by Bituminous Coal Research, Inc., as a result of a contract award by the Atomic Energy Commission. Under the program BCR will concentrate on those problems in the production and use of coal where existing radioisotopic technology can be applied and also on coal-industry problems that might require the development of new radioisotopic methods. "The results of the study should comprise an excellent basis for programming further radioisotopic research and engineering projects to develop improved coal-production and utilization methods."

The latest and newest in all types of electric direct-resistance heating equipment, zone-type heat pumps, central-heat pump systems, insulation and electric controls will be featured at the first National Electric House Heating Exposition, at the Sherman Hotel, Chicago, Ill., March 21-23, 1960. Sponsors of the event, to be accompanied by wide-ranging technical sessions, include the United Mine Workers of America.

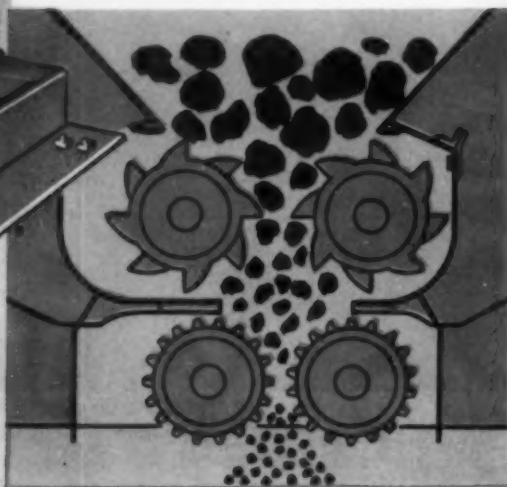
## Labor

Charging conspiracy and proceeding under the terms of the Sherman Act suit for \$288,000 was filed against the United Mine Workers at Lexington, Ky., July 28, by H. C. Combs. His loading ramp at Whitesburg was dynamited April 9 a month after the union shut down the mines in eastern Kentucky in the absence of a new contract. Joining with his Isom Coal Co., Inc., in the action were the Underwriters' Insurance Co. and the National Fire Insurance Co. The suit stated that before the strike Mr. Combs netted \$2,000 a month on 8,000 tons, but now produces about 200 tons a month at no profit.

A decision favoring 15 men asking for reinstatement and back pay from the Peabody Coal Co. was handed down by an examiner for the National Labor Relations Board in July. The action grew out of the closing of old properties and the opening of a new one at Pleasant View, Ill., in the course of which the men lost their jobs. The examiner held that the discharges were unfair and recommended that Peabody "make whole the individuals for any loss of pay they may have suffered to date from Feb. 13, 1958."



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**HOLAN**







SEPTEMBER 1959

IVAN A. GIVEN, EDITOR

## Shorter Deadline

IT WAS SOLIDS. Now it is sulphur and solids in the thinking of agencies concerned with cleaning up streams, including the seven-state Ohio Valley Water Sanitation Commission, otherwise known as ORSANCO. In fact it has been sulphur and solids for some time, though the agency has not yet moved to really put the pressure on. But it is getting closer to that day, though still hoping for voluntary action on the part of coal and other industries—or more precisely a lot more than has so far appeared.

The prospect of sizable expenditures for which, in many instances, little or no return can be expected, is not a happy one anytime and especially now in coal mining. But ORSANCO and

other agencies are getting closer to lowering the boom and a crash program probably would be more expensive and less satisfactory than a planned approach under no pressure.

Coal's representatives have done an able job of keeping the approach to elimination or reduction of pollution a reasonable one. If they are not backed up by more action in the industry, however, their job will become more and more difficult in the face of continued rise in public, conservation and other pressure. This backing should be forthcoming immediately and on a voluntary basis. In that way the job can be done with less cost, less stress and strain, and more results for the money and effort expended in the process.

## Big and Small

THE CAMPAIGN in the 86th Congress to extend the provision of the Federal Mine Safety Act to the so-called Title II mines, those employing less than 15 men, naturally leads to an investigation of the present position of such operations in the industry. The short answer is that they are now much more of a factor than they were 20 years ago.

Most of the Title II mines fall in Classes 5 and 6 (100,000 to 500,000 and 1,000 to 10,000 tons). In 1937 these mines constituted 77.1% of the total number and accounted for 8.6% of the output. In 1957, the latest year for which data are available, these mines aggregated 84.5% of the total number and were responsible for 14.5% of the bituminous

output. The increase marked up by the Classes 5 and 6 mines in 1957 over what their total would have been had the 1937 percentage still prevailed was nearly 30,000,000 tons.

Who lost it? The Class 1 (over 500,000 tons) mines constituted 2.9% of the total in both 1937 and 1957, but increased their share of the output from 36.4 to 48.5%. The lickings were taken by Classes 2, 3 and 4 which, as a group, dropped from 20.0 to 13.8% of the total number and from 55.0 to 37.0% of the total output. Staying power now seems to lie with the big and the small, with the 200,000- to 500,000-ton operation, on the basis of this record, the most vulnerable.

# The Most Basic Managerial Skill . . .

"OF ALL THE MANAGEMENT SKILLS, ability to achieve effective communications is the most basic. It is the force, continuously in operation, which translates all other skills into smooth functioning parts of the total company operation. Edward C. Bursk, *The Management Team*, puts it this way:

"Delegation and control are the principal functions for the development of the greatest potential effectiveness of the management team. And freer communication must be achieved before extensive delegation and control becomes possible. Knowing how to delegate, how to exercise control and how to achieve freer communication are essential skills of the executive."

"For a communicative system to be effective, understand:

"1. That the main purpose of communications is to achieve a full meeting of the minds between all parties whose job functions are vital to the attainment of established company or departmental goals.

"2. That there must be two-way communication up and down the organizational pyramid with free access by all individuals to appropriate supervisory authorities.

"3. That the means of communication—the spoken or written word, the visual aid, etc.—must be geared to the interest and comprehension of the audience.

"4. That reaching another person's mind commonly involves the need to adapt to, or compromise with, deep-rooted prejudices, stubbornness and language deficiencies.

"5. That the fine art of listening be consciously cultivated.

"6. That publications—bulletins, annual reports, memos, posters, etc.—have their place but never substitute for personal contact in many situations.

"Once implemented and continuously followed by the total managerial force, these guideposts will contribute greatly to making communications come to life as a vital tool for promoting top personnel performance. They will also find particularly valuable application in problem-solving, getting better discipline, overcoming resistance to new methods and machines, getting better understanding of company policies, and in reducing complaints and grievances."

The above paragraphs are taken from the *Coal Age* feature, "How to Modernize Coal Management" (June, 1959, p 81). Under this broad heading which treated numerous sub-topics, it was possible only to give highlights of the role of communications in modern management practice. However, because know-how in communicating effectively is so basic to all other management skills, *Coal Age* asked a communications specialist, N. Richard Diller, to probe more deeply into the subjects for its readers.

Mr. Diller is associate professor of psychology, Management Training Dept., The Pennsylvania State University. In this capacity and as a member of Penn State's Associated Management Services, he has served as consultant, lecturer and conference leader to various industries in southeastern Pennsylvania. Especially during the past 3 yr, coal-executive and supervisory personnel have come to esteem him highly for his stimulating leadership at Penn State's management workshops for the coal industry (*Coal Age*, June, 1959, p 76). Mr. Diller's article follows.

For more effective coal management learn . . .

## How to Improve Communications

By N. Richard Diller

Associate Professor of Psychology and Member, Associated Management Services, The Pennsylvania State University.

### Effective Communications: Vital Management-Labor Link

The continuance of our present economic system depends largely on the effectiveness with which labor and management communicate with each other. This certainly was not true in the early years of our country. The individual was the all-important factor. If he didn't like the results of his farming in the East, he pushed

on across the mountains and staked out a new claim.

Even during the early years of our industrialization the need for communication was reduced. Full responsibility for the economic system was in the hands of management—there were no labor unions. Now, however, we have both powerful corporations and powerful labor unions. These two forces are compelled, like it or not, to concentrate on the attempt to exchange ideas if they are to continue to exist and prosper.

The effectiveness of communication between the supervisors (representing management) and the employees (representing their own interests), determines, in fact, the

efficiency, harmony and productivity of today's industrial plant. This certainly was not true years ago. Then, management ran the company with few, if any checks or restraints. If a worker proved obstinate, lazy, or inefficient, he was fired and a new man put in his place. Now, because a company of any fair size is held to a union contract, problems formerly solved through the "logical" method must be approached from a human-relations point of view. Both the company and the employee, find each other faced with the problem of learning to communicate with each other. Only in this way can the plant assure itself of a place in the competitive market.

The test of good communication is the extent to which it actually helps the communicator to make satisfactory adjustments to his environment. What does this mean? Simply this—if you, the supervisor, can talk the “language” of your employees, you have made a satisfactory adjustment to the industrial environment where you operate as a representative of management. Ask yourself for example, these questions:

When you train an employee, are you able to do the job so that he understands perfectly just how to perform the work—with 100% safety, greatest efficiency, and minimum of waste?

Are you able to handle the numerous personal problems which arise each day, so that those employees who need close personal supervision feel they have a superior capable of dealing with such problems?

Are you able to reflect, explain, and promote management's policies to employees?

If you can answer “yes” to such questions, you are doing a good job of communicating.

In communicating with your employees (or, as a matter of fact, with anyone), you will find yourself using the two main types of communications: oral and written.

You will find yourself using the oral or written word either to inform or persuade, or, at times, both.

To do the best possible job with either type of communication, for either purpose, you will need three things: knowledge, self-confidence and skill.

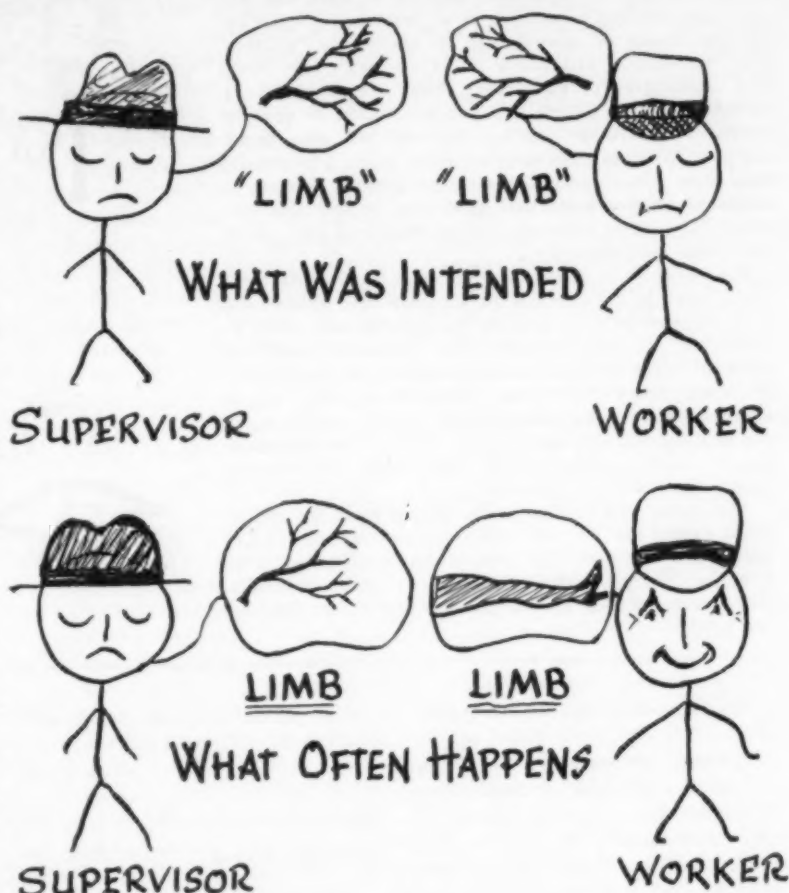
Constant study and practice will help you achieve these three requisites for good communication.

### Cooperation the Ultimate Aim

Knowing how to improve communications first requires that the term be defined. From a business sense, communications is the process by which ideas, attitudes, convictions, and insights which help a business reach its goals come to operate through the right persons at the right time.

Thus defined, the ultimate aim of communication is cooperation. Look at the word and think of it. Think critically. It means joint activity or, “doing things together.” We might say, it's a matter of “getting along.”

## Avoid This Common Pitfall . . .



FAILURE TO GET the picture across is a common problem in communicating effectively. Among the answers: Say less, listen more, encourage “feedback.”

While we simplify the term and reduce it to common words, the problem of achieving this cooperation is not nearly so simple. There is no secret formula. There is no miracle drug. Cooperation is a difficult thing to secure and yet it has been, is being, and will be achieved by those who earnestly seek it.

Man, of course, is basically a social creature and is inclined by nature to live with other men or is forced to do this by necessity. He very early found that he was able to do his best by joining with others who had the same common problems and the same common enemies. From the time he joined with others, there appeared and developed the philosophy of the survival of the most, rather than the survival of the fittest.

Resistances were constantly met both by individuals and within and

between groups. Only after these resistances were eliminated could cooperation be truly complete and was man ready to move on to a larger unit of cooperative living.

### The Immediate Aim: Convey Meaning

Certainly one of the most necessary techniques or devices used in serving man in his quest for more effective social and industrial life has been language. Because man is a herd creature and functions in group situations, he has been forced to resort to different devices to “get his meaning across.”

Communications thus becomes any device or system of devices which are used to convey a meaning or idea from one individual to another. Remember, conveyance of meaning



## The Rumor: Detecting and Derailing

RUMOR FLOURISHES in industry because the human mind abhors a vacuum, or at least is irritated by the incomplete or unexplained. If there is a "missing link" employees will fill it in, if not with the truth, with assumption or conjecture. They are eager to try to figure out the puzzle, pass on a solution or eagerly accept the solution another has worked out. Some explanation, even the inaccurate, is more pleasurable than none. Once started, the rumor spreads because it seems to answer important questions, it furnishes excuses for action, relieves pent-up emotions and makes the teller feel important.

The tragedy is that rumor or word-of-mouth communication is not always an accurate and dependable tool. Experiments in passing on information from an "observer" to and through four "listeners"—with no lapse of time between communications—shows that efficiency drops with each transmission. Out of an average of 34 items transmitted only 9 remained in the final report. And examination of the remaining number of "bits" transmitted by the fourth man showed about 50 to 60% inaccuracy.

The rumor can be dangerous. It can harm the individuals concerned; it can ruin employee morale; it can harm the company; it can drive wedges between friendly groups, units, departments and companies. The accompanying sketch gives a convenient formula for action..



is the immediate aim of communications.

Getting the meaning or picture across should seem a simple thing but most of us know this is not true. All too frequently we hear a supervisor say: "That's not what I wanted you to do." Similarly a parent will say to a child: "Why didn't you do what I told you?" and the child replies: "But I did what I thought you wanted me to do." These are simple demonstrations of the problems involved.

The man communicating must recognize that the words he uses will not necessarily perform his communicative job unless he uses these words skillfully. The man being communicated with must compare, evaluate and associate your idea with what he already knows or believes. Then, the result is really what we have communicated. Those who become confused in the process of getting ideas across, frequently resort to the use of more and more words. Instead, we should use fewer words and use them more effectively.

Since it is so difficult to get across our ideas or meanings through language usage, it should spur us on to improving our skill in language usage. Many persons do this through courses in English, Grammar, Letter Writing,

Public Speaking. Many more could profit from such courses.

### Better Listening A Critical Need

Frequently neglected is the art of listening. In any effective communication system, there must be "receivers" as well as "transmitters."

Listening really begins with an attitude toward others and their efforts to communicate. It begins with an interest in what they have to say. So frequently we are not really interested in the "other guy's" contribution. This occurs many times to the point of rudeness.

We are so impressed with the "brilliance" of what we have just said or so enthused by what we plan to say, that we interrupt or "hop-in" many times at the first comma or stop for breath which the other fellow takes.

Listening begins with attention and interest. It includes self-control, constructive reply and intelligent questions which help the other person to put into words his feelings and thoughts.

Listening thus will entail a good retention of what has been expressed and an indication to the speaker that

we have listened, understood, and are evaluating. Naturally good listening usually carries with it the reservation of judgment until the message has been adequately expressed.

Listening is a discipline which improves inter-personal relationship; it actually cuts down on communicative time and gives much better understanding of the facts and feelings with which one must constantly deal.

To develop the art of listening, practice the following "do's" and "don'ts":

#### Do's

1. Encourage with non-committal remarks, such as "uh-huh," "I see," "That's interesting."
2. Encourage by: nod of the head, smile, expectant pause.
3. Summarize and restate what the other person has said—in his words.

#### Don'ts

1. Don't interrupt.
2. Don't show approval or disapproval.
3. Don't put words in other people's mouths.
4. Don't lead.
5. Don't argue, admonish or show authority.



Be aware that the following are obstacles to the listening process:

1. Ignorance of "how."
2. Lack of concern for "why."
3. Lack of interest.
4. Preoccupation.
5. Egocentricity.
6. Insecurity.
7. Vocabulary.
8. Lack of time or failure to provide for time.
9. Poor physical environment: temperature, noise, light, interruptions (telephone, etc.).
10. Poor hearing.

Consider the following as methods to promote listening:

1. Accept "listening" as definite part of communication.
2. Avoid distractions.
3. Encourage speaker and extend what he says.
4. Wait—Don't "hop-in" and take over the conversation.
5. Communicate understanding of thought and feeling.
6. Ask for ideas and suggestions.
7. Provide enough time.
8. Agree, doubt, question, react by word or gesture (don't be impassive).
9. Reflect the feeling or meanings expressed (mirrored response).
10. Don't be too eager to terminate the conversation.

### Lack of Communications: Key to Why Men Fail to Cooperate

Before going further consider the following list of reasons why men fail to cooperate and note how some language factor or communicative failure seems to creep into the uncooperative behavior:

**1. Ignorance** — This is a lack of capacity, a lack of intelligence, a lack of knowhow. Men who are not too wise cannot free themselves from fears. Because they cannot understand clearly, they tend to be resistive.

**2. Physical Barriers** — In today's plant societies there are physical barriers such as segregation, poor layout, poor communication, separation of plant units, language etc. Language may not seem to be a physical barrier, but in a great sense it is. It makes it almost impossible for individuals to cooperate if they do not understand the terms, the codes, the language of the industry and the many interpretations and implications.

**3. Fear** — This may be a reaction to coarse language, a rough attitude, the penalty-type of discipline. Because of this fear, there is a reaction in the individual wherein rather than cooperate, he is suspicious, resistive, angry, and adds to the difficulty of harmonious living.

**4. Suspicion** — This is born of the lack of knowledge. It is born of the lack of proper communication. Lacking factual knowledge and explanation of phenomena and happenings, men start to imagine and often imagine conditions which are less than favorable than actually exist. When man is in the dark he is apprehensive and on guard. He reacts much like an animal and is defensive and overly cautious.

**5. Lack of Discipline** — Much of our cooperation today should stem from an early learned pattern of behavior. As part of the maturing process a child should be taught certain requirements for effective living in a social group. He learns or should learn that the will of the individual must be secondary to the good of the group. Actions of each must be controlled to insure the best for the most of the unit.

When reaching adult life, the individual now normally reacts in an acceptable pattern because he has been so conditioned. He finds that cooperation is something which is necessary and therefore is cooperative in the majority of cases. Where this early training is lacking, the individual reaches adulthood still reacting in an immature way and striving to have his own basic urges, or his acquired desires, satisfied even at the expense of the group. If no provision is made for the training or control of such individuals, cooperation will lag.

**6. Lack of Attention** — When a man feels that nobody cares about him or his performance one way or another, he tends to lower his standard of performance. He, too, ceases to care a great deal. He is certainly not motivated to cooperate with a person who evidently has no concern for him or his work. Studies have shown that workers who received praise produced best; workers who received criticism produced next best, and the workers who received no attention at all ranked lowest in productivity and quality.

**7. Neglect of Feelings and Status**

—Each individual record of background, intelligence, training, or position is concerned with his relative prestige in the unit of cooperation action whether it be an industrial unit or a social unit. He must be kept above ridicule in his own eyes and in the eyes of other people. When this feeling of status is threatened either deliberately or because of ignorance, he will immediately become defensive and will cease to be a cooperative individual.

**8. Danger to Satisfaction of Basic Drives** — (food, clothing shelter, etc.) — He who threatens the security of an individual and who throws blocks in the path of the attaining of the above-listed needs will find nothing but resistance and antagonism; the individual or organization which assists him in satisfying his desires and achieving his ambitions will find a cooperative person.

**9. Insufficient Motivation** — Individuals are egocentric. In some way each person must see: "What's in it for me."

**10. Purposeless Activity** — Both "9" and "10" can perhaps be voiced in one breath since they react on the individual in the same manner. The person who is told the important facts about the work of his activity and who is given incentives, tangible or otherwise, will produce and will cooperate. When these two types of activity are neglected, the workers certainly will not be considered cooperative. This effect will show up in their group attitude and in their individual application.

### How to Get Men to Cooperate: Communicate Effectively

Now consider the following list of ways to increase cooperation, noting how many are based upon effective communications:

1. Give them knowledge and facts.
2. Improve general communication.
3. Provide opportunity for members of various departments and various levels of authority to meet and exchange information on their needs with the aims, and problems and ideas of others.
4. Provide an occupational structure which will permit cooperative action.
5. Free men from fear — eliminate from the scene discrimination, petty politics, abandonment, the "Ogre of

the Office," the "Bull of the Woods," and the "Tyrant on the Telephone."

6. Free men from suspicion—open all lines of communication; permit access to higher authority; eliminate partiality and discrimination; demonstrate sincerity by action.

7. Treat each man as an individual—listen and cater to his needs for growth, attention and status.

8. Take steps to increase security, fringe benefits, etc.

9. Spread the word of the why and wherefore of each worker's activity.

10. Let the employee identify his goals with the company goals.

11. Include him in planning, provide sharing, etc., whenever possible.

12. Build his faith through sincere and wholesome human relations.

### Setting the "Climate": Patterns and Pitfalls

From the foregoing discussion, the following broad patterns of approach emerge as basic to setting an effective communications "climate":

1. The relationship between people communicating must be sound and healthy, and built on mutual confidence, especially in face-to-face or oral contacts.

2. All communications must be directed toward mutual satisfaction of needs. Important to remember is that workers change behavior because a new way of thinking or doing fulfills a personal need.

3. Communications must be an active, two-way process—the worker must be given an opportunity to question and criticize.

4. Communications must be sincere and open. Don't pussy-foot. Don't hide anything under the "bed." If there is something under the table, say so.

Equally important to the effective communications climate is avoiding these common pitfalls:

1. **Failure to recognize need**—One of the greatest needs of individuals is a feeling of security. Communications help to give the group some idea of "how the land lies" or "which way the wind is blowing." When people fail to understand, here are a few of the more common forms their reactions may take: attack, rejection, ridicule, avoidance, suspicion, fear, investigation, blind acceptance. To the extent that knowledge is

brought to the individual or group, these undesirable reactions can be overcome and attitudes and efficiency can be improved.

2. **Failure to Evaluate Present Methods**—Much communicative behavior is mere compliance with previously used devices. A "monkey-see-do" type of performance is often seen. Not enough time is taken to question communicative devices and methods.

The questioning attitude should be encouraged. A systematic and structured analysis of present methods should be initiated.

Following are sample questions which should be raised:

1. Does this bulletin tell the facts with a minimum of words?

2. Is this particular report read?

3. Has enough time been given to ensure that the report is fact and not fiction?

4. How many people actually read the bulletin board?

5. Who is getting what and why?

6. Do all attending meetings receive notice of the purpose and adequate time to prepare?

7. What is the language level of company communications?

8. How much communicative feedback is encouraged, provided for and given realistic consideration?

9. How much communicating is of a "repair" nature to clear up situations due to improper initial communications?

10. Are people getting the facts from the correct person in the proper manner?

3. **Failure to Establish and Communicate an Effective Organizational Structure**—Communication is extremely difficult to accomplish if the channels through which such information is to flow are not well established or are blocked. Even when a system of highways is established people will have limited or difficult use without proper highway markers and clear, accurate road maps.

The super-highway structure (limited access) used in many states, illustrates how flow can be facilitated. Confusion, diversion and lost time are reduced because of planning and wise structuring. Much of the same ideas can be utilized in setting up a communication system in industry.

4. **Failure to Follow Organizational Structure**—Regardless of how fine an organizational structure is set up

in a company, it is "labor-lost" if not followed. Position should be created to handle some specific segment of responsibility and authority. Matters concerning this segment should originate with or be directed to this position.

The areas of responsibility for all positions should be clearly and constantly communicated. Every effort should be made to ensure that all individuals (regardless of level or job) follow these channels.

A subordinate should not be free to discuss a problem, seek information or feed information to a superior unless he has attempted first to deal with his immediate supervisor. If he has not received "communicative satisfaction" he should then be guaranteed the right of access and appeal to a higher level.

By the same token, superiors should recognize their responsibility to follow established channels. In many industrial situations, "by-passing" is done more frequently from top-down than in reverse order. In some family-owned concerns, for example, this happens frequently. Supervisors will say: "Nobody is going to tell the old man to clear through the shop-foreman, if he wants to talk directly to a worker." Perhaps nobody would dare to tell him this. But the supervisor should recognize the trouble such actions can cause in countermanded orders and conflicting instructions, to say nothing of the loss in status to intermediate levels of management.

5. **Failure to Communicate at Proper Level**—Information should be fed to and asked from persons at the proper level. Certain information should be fed to top level management and only certain aspects of this should be communicated to subordinates. Certain requests for information should be secured from front-line supervision, or middle management while other requests should be made directly to front line workers.

Another phase of this failure-area applies to the intellectual or educational level. The reading or comprehension level of individuals or groups varies considerably. It has been stated that the average level for the United States is that of a seventh grade student.

Analysis of many lectures, letters, bulletins and instruction sheets shows that their level of comprehension far

exceeds the capacity of the group, or certainly of specific individuals of the group.

We certainly wouldn't think of attempting to communicate in a language foreign to the one on the receiving end, and yet many words used — technical and otherwise—are really as meaningless as a foreign language to many people.

One good "rule-of-thumb" is to avoid complex words, lengthy sentences and long, involved paragraphs.

#### **6. Failure to Provide Feedback—**

In other words, we might simply say that man was given two ears and only one mouth and he seems to spend much of his communicative time trying to make up the deficiency. Perhaps the ratio should be a direct one. Instead of being so constantly concerned about how to increase communication, we should be more concerned about how to communicate more effectively. Basic to this achievement is willingness to remain silent and to listen more frequently and more intently.

**7. Failure to Follow Through Revise and Revitalize —** The Indian chieftain has often been pictured as saying, "Ugh, I have spoken," and then terminating the interview. In many industrial situations, it seems as though Indian chieftains are dominating the communicative scene. Right down the line, many executives and pedestal management people evidently believe all they have to do is to speak the word and send the note. Without follow-through, the effectiveness of communication will never be known. In addition, without follow-through, the need for revision will never be uncovered.

Since conditions in an industry are never the same, all management techniques must be under constant evaluation and revision. To use the same kind of letter, the same bulletin-board techniques, the unrevised supervisor's manual, the same type of company magazine or newspaper is probably one of the greatest forms of "hidden" losses which exists in industry today.

A general analysis of communication practices and tools should be undertaken and carried on as a constant management technique.

**8. Failure to Establish True Communicative Contact —** One solution here is to determine basic issues. Effort expended to determine what

people really want and need to know would cut down communicative effort and expense. Frequently writers and lecturers devote far too much time in exposition of the obvious. In plain language, too much time is wasted in communicating known material or inconsequential. Time should be taken to find "where we stand" and "what we know." Transmittal communication should take over from there.

A second way to establish true communicative contact is to "clear the air." Many interpretations may be given to this. Let us consider only the following two:

1. Clear the air of rumor and false conjecture. Whenever possible put your finger on the pulse of your unit. Find out what kind of "scuttlebutt" is floating around. Communicate the facts concerning these areas of interest, clearly, simply, and immediately. One firm used a corner of the bulletin board near the lunch room. Workers were encouraged to pass on scuttlebutt or request information by pinning unsigned notes to this board. These notes are picked up on an hourly basis and an official statement of the facts of the situation is posted before the close of the work-day, if at all possible.

2. "Clearing the air" also should be considered in terms of improving attitudes and clearing the industrial atmosphere of negative attitudes and disturbing emotional factors. One of the important laws of learning is that of "readiness." Stated simply this means that one learns best when he is "ready" for the material or action.

To lecture before the attention is captured is ridiculous. To discuss when distractions are present is wasteful. To send out bulletins and letters if time is not available to read well, is nonsensical.

To converse, counsel or attempt to reason while a person is under strong emotional pressure is just as foolish.

Create the atmosphere for good communications before constructing the device.

A third way to establish true communicative contact is to secure real interest. As stated before, man is egocentric. His interest is in things involving self. As he is led to identify with group goals he will tend to develop interest in communications involving the group. The "light-brigade"

philosophy — "Yours is not to reason why, yours is but to do and die"—is obsolete. How many reasonable creatures will accept such a philosophy? Man being a reasonable creature should be given reasons if he is to become more reasonable in his attitudes and behavior.

A fourth route to true communicative contact is through understanding of the mental disposition of the listener. Since words in themselves have no meaning, it is difficult to predict what reaction one's words will create in the mind of the listener. As the communicator understands and identifies himself with the listener, he is better able to know the listener's attitudes. The communicator thus becomes better equipped to predict "mind-set" and to gain perceptions helpful in communicating to avoid misinterpretation. Basic courses in psychology and human relations are probably as desirable as any course in communication principles and techniques.

### **Tridirectional Communication: What It Means; How It Works**

Effective communications is basically a two-way process involving the transmitting and receiving of information. The process must, however, work in three directions — "upward," "downward" and "across." Common to all is the need to get meaning "through" to people. Analysis of each of these components will show (1) why tridirectional communication is essential to attain personal and organizational team goals, and (2) why its achievement justifies the investment of time, effort and money.

The first requisite for communicating "upward" is to learn how to talk to your boss. This is dependent upon what he wants to know and what you wish he would tell you. It is essential then (1) to know yourself and your job, and (2) to know your boss and his job.

To know yourself and your job, take a personal audit of your personality, traits, capacities, needs, interests, goals, etc.

Take an organizational audit of your job requirements and responsibilities, authority, organizational and departmental goals, etc.

Devise a plan of action for personal development, including on-the-job-training, off-the-job education,



and membership in professional groups.

To know your boss and his job, study his personality traits, needs, interests, goals, responsibilities, schedules, etc. Make a practice of learning what he wants to know. This may include:

1. Progress on projects, schedules and assignments.
2. Problems such as errors, delays, material shortages, grievances, breakdowns, etc.
3. Deviation from original plans.
4. Suggestions, ideas related to job basics, improvements, etc.
5. Your relations with associates and subordinates.
6. "Climate" in general.

**Essential to communication "upward," your boss must know what you want from him. This may include information on:**

1. Your personal performance.
2. Business and competitive conditions; plans, present and future.
3. Your authority and responsibilities.
4. Changes in same and in policies, procedures, etc.
5. How to increase your effectiveness with him.
6. Opportunities; salary situation.
7. Sales; costs; financial reports.
8. Special events, new products, promotions.

To communicate "downward," bear in mind your subordinates want to know the same information you want from your boss; and you want from them the same information your boss wants from you.

In communicating "across," consider the need to exchange information between yourself and your associates on:

1. Present and future assignments of mutual concern.
2. Authority and responsibilities related to each other's work.
3. What you can do to help each other.
4. Any information related to the fulfillment and satisfaction of each other's needs and goals.

**The substance of tridirectional communication is "meaning." Its basics are:**

1. **Purpose.** Why are you making this communicate—to influence behavior, stimulate action, change an attitude, exchange information? Establish

exactly what you wish to achieve, what you want to gain.

2. **Facts.** What is the subject matter of the communicate? It must be designed to achieve the purpose. Does it make sense? Is it privileged? What is the best medium? Timing? Climate? What are the by-products, incidental to or unintentional, which may be latent or patent in the communicate? Are your acts compatible with the message?

3. **Feelings.** What do you know about the person to whom you are communicating? What is his probable response? Play down your own feelings. What is the readiness factor of the receiver to receive, to act? Are you listening? What are the needs of the receiver? What are his background, experience, personality traits? What is the receiver's likelihood of acceptance, modification or rejection?

## Guideposts to Success

By now it should be obvious there is no easy route to achieving the goal of really effective communications. Difficulties stem primarily from the fact that the job covers the total management operation, as well as the total personal experience of each individual within the operation. The job is also difficult because it cannot be done properly on a hit-or-miss, stop-and-go basis; it must be consciously, continuously practiced. In spite of these difficulties, however, the goal is within reach. And those who recognize its benefits and seek it seriously will find the following guideposts helpful to success:

1. Understand the importance and reason for good communication. Take time to reflect upon your own feelings and needs, your relationships with other company personnel and the operation in general.

2. Regard communications as the nerve system of the company and recognize the desirability of "good nerves."

3. Constantly keep aware of the difficulty of conveying "meaning" through words.

4. Plan, for example, for 50 min and communicate 10 min. Most people do exactly the opposite.

5. Get in the habit of saying less and listening more.

6. Be considerate of your listener whether one person or a group. Are

you making it easy for them to listen? Have you created proper conditions, organized your material and geared it to the listener's level of comprehension.

7. Be sure you use a number of different sensory channels—let listeners hear, see, etc.

8. Provide sufficient opportunity for feedback. For example, are you open to suggestions? Have you a suggestion-box system? Are your meetings run democratically? Do you encourage questions? Do you ask specific questions to evaluate your own communicative efforts? Do you give proper attention to reading notes, letters, etc?

9. Withhold judgment until you have determined the "real meaning" which is being communicated.

10. Be willing and have the understanding to accept other viewpoints as a means of building efficiency rather than as a criticism of personal ability.

11. Deal with problems, possible solutions, performance and potential values rather than personalities.

12. Consider the conference as an opportunity to acquire knowledge, to pool information and to reveal attitudes. All of these are woven into the solving of problems. All require a high degree of participation. Note the word is CONFERENCE.

13. Remember that conference and discussion are built on the possibility of agreement and the inevitability of disagreement. If all agree at the beginning, there is no real need for conference.

14. Let emotionally aroused people relieve their "head of steam." We cannot function intelligently if we are too emotionally aroused.

15. Change attitudes by exposure to facts not through demands, arguments or threats.

16. Avoid criticism or oral discipline in public. Such action reveals a low degree of self control, and a high degree of craving for an audience.

17. Be direct, concise and clear in all communications. Your time and your listener's time is worth dollars.

18. Practice what you preach.

19. If you lack skill in speaking, writing or any other type of communicative technique, don't simply rationalize and alibi your way out of it. Take some kind of training to develop the skill.





**READY FOR ACTION**, Dredge Vlaanderen XI floats on pond at Westfield stripping site after shipment from Belgium and reassembly. It removes peat and sand to uncover four coal seams, and will operate over an area of 270 acres.

## Dredge Stripping At Westfield

Sand and peat in the burden dictated use of dredge for removal at Westfield stripping, Kinglassie, Scotland. Property will supply Lurgi gas plant.

**UNCONVENTIONAL METHODS**—to wit, suction dredging—are being used by Richard Costain, Ltd., at the Westfield strip-mining site at Kinglassie, Fifeshire, Scotland. The operation will supply coal to a nearby Lurgi gas-manufacturing plant after blending, crushing and screening. Coal also will be sold on the open market and this coal will be stored in two 13,000-ton bunkers for blending before washing.

The stripping area, about 270 acres out of a total of 920 (the remainder being used for overburden dumping, buildings, etc.) contains a layer of peat, underlain by sand up to a maximum depth of 40 ft. Under the sand are four main seams of coal. Reserves total 25 million tons, or enough for about 20 yr of production. By the end of October, 1958, some 4½ million cu yd of overburden already had been removed by dredging. Removal of the coal will follow the dredging.

### Assembling The Dredge

The dredging work is being done under contract with the National Coal

Board of Great Britain, and participating with Costain is Blankevoort & Zoon, Bloemendaal, Holland, owners of the dredge *Vlaanderen XI*. Originally constructed in Holland, the dredge was working in Belgium at the time the Westfield project came up. Its weight is 550 tons making it one of the largest of its type in Europe.

Four ships brought the dismantled unit to Leith, Scotland, and two more carried the pontoons and some 500 pipe joints with a total length of 9,000 ft for the discharge line. From the port the components, including one 71 ft long and weighing 27 tons, were trucked to Kinglassie.

Length of the dredge is 143 ft; width with oil-storage pontoons is 39 ft; draft is 6 ft. It is equipped with a 71-ft-long cutter ladder at the bow, the ladder in turn carrying the suction line and a 7½-ft-diameter cutter covering the mouth of the line.

The dredge was erected in a dry dock dug out at the site, and the excavation area was flooded from a stream running through it, supplemented by water pumped from Kinglassie Colliery 1¼ mi away.

### Operating The Dredge

The dredge is anchored for operation by dropping one or the other of two spuds at the stern. It is moved forward and the cutter end is swivelled back and forth by wire ropes and hoists, the ropes being anchored on land.

The suction line delivers to two 7½-ft-diameter pumps, each driven by a 1,520-hp motor. These deliver an average of 20,700 gpm of a water-solids mixture at a total head of 70 ft with a mile or so of 26-in discharge line. The discharge is through a swivel at the stem connecting to a flexible over-water line carried on floats.

The first operation in dredging is to cut down to the sand layer. This is done by swivelling the machine slowly back and forth in an arc by pulling on the port and starboard anchor cables.

Excavated material is pumped to twin drainage and storage basins formed by dikes 67 ft high. Total capacity of the basins is about 5.3 million cu yd. Drainage water is returned to the pond by flumes leading to pipes under the dikes around the basins.

Average dredge output is 900 cu yd of solids per hour. In 49 working weeks (not including weekends) it has excavated 4,382,000 cu yd, or an average of 90,000 cu yd of material per week.



**CABLE-SPLICING CENTER** is organized and laid out so that 52 splices can be made at the same time. All cables are tested both before and after being repaired.



**TESTING TANK**, containing salt water, helps locate small defects in jacket.

## Low-Cost Cable Splicing

Better cable-repair methods lead to profitable business at Washington, Pa., repair center; save money for coal companies.

A CABLE-REPAIR service that started as a part-time after-work job is now a thriving full-time business for Cyril Davidson, Washington, Pa. Mr. Davidson's repair center, which specializes in repairing both neoprene and plastic cables, serves mines within a 100-mi radius of his Washington

shop, center of the Tri-State area.

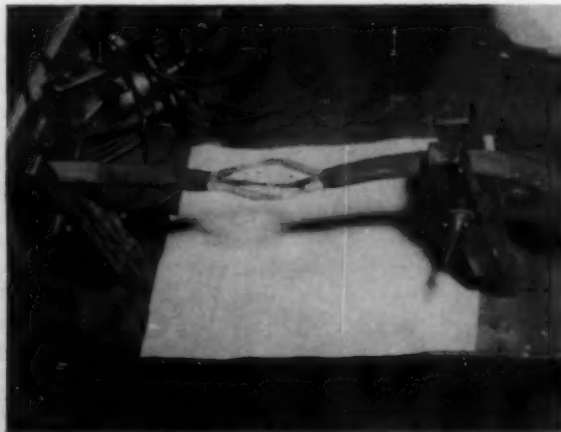
Mr. Davidson sets forth a number of reasons why his company is able to go as far as 100 mi to pick up the damaged cables, bring them to his shop for repairs, then return them to the owners and do the job better and at lower cost than the mines.

For instance, he uses the best materials to make the splices, does all brazing of conductors himself and closely supervises all other steps in the repair work. It is this personal attention to the work, as well as being equipped to make repairs rapidly and efficiently, Mr. Davidson notes, that keeps a steady stream of business coming his way.

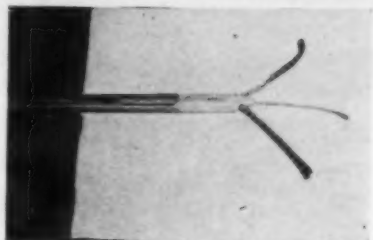
The Davidson shop is laid out so that as many as 52 splices can be made in assembly-line fashion at one time. Thus the cost of making a splice is kept to a minimum. Thorough testing of each section of cable both before and after repair provides insurance against future failures in



**ROUGH SPOTS** on brazed joints are smoothed with power grinder before new insulation is wrapped around conductors.



**REJOINED** conductors of neoprene cable look like this before new insulation is added. High strength is the goal.



**PLASTIC CABLE** requires special repair technique. Main conductors are cut free from jacket, then covering on ground is cut several inches closer to end. Center covering is then buffed to conical shape.



**BUFFING** outer jacket of cable provides a clean surface to which the new material can make a good bond and improves field performance.



**BRAZING** with top quality materials assures good joining of conductors. Torch flame is kept small to prevent damage to conductors.

weak spots not visible to the naked eye. This testing usually results in a repaired cable lasting about as long as a new cable.

Once a week a Davidson truck leaves the shop with a load of repaired cables which are distributed to the respective owners. Damaged cables are picked up along the way and tagged with each owner's name. These identification tags are kept on each mine's cable throughout the repairing process.

### Cable Testing

Each cable brought to the shop for repair undergoes an underwater test that is designed to detect pin-

hole defects in the insulation. Cable is fed from the spool through a special testing trough filled with salt water and the cable end is submerged in a second small metal container of salt water. Leads from a cable-testing unit then are connected to the large trough and to the smaller container holding the end of the cable.

The cable tester is set at 2,200 V and the cable is slowly pulled through the trough. Workers wear rubber boots, rubber aprons and rubber gloves while this testing is done. Any defects or leakage in the insulation causes an arc between the cable and the side of the trough. When an arc appears the defective area is marked for later inspection and vulcanizing.

After this test is completed an insulation test is made.

Mr. Davidson reports that this testing before repairing and again after all repairs are complete usually eliminates cable trouble for a month or more after the cable goes back into service.

### Neoprene Splicing

Mr. Davidson recommends the following procedure for getting good neoprene splices:

Cut out all temporary splices with a square cut across all conductors. Remove the outer neoprene jacket, taking care not to damage the inner insulation, and place the two ends



**NEW PLASTIC** is applied by wrapping strips around conductors. Heater with blower eliminates bubbles in splice.



**FINAL STEP** in cable repair is curing splice in heated mold. Power wrench speeds opening and closing of molds.



## Maintenance Ideas

in a bench vise. Remove only enough of the inner insulation to provide room for splicing. As soon as a conductor is exposed seize the end temporarily with wire to prevent untwisting of the strands.

Buff the jacket for 3 or 4 in back from the exposed conductors. Place the buffed cable end in a bench vise to keep it clean. Be careful to match conductors with other pieces of cable to be spliced.

Butt join the ground conductor, first touch tinning the ends of the wires very lightly and then drawing the repaired conductor taut in the vise. Cut the other two conductors so that one splice will fall on either side of the ground splice. Leave about  $\frac{1}{8}$  in between ends of the conductors for proper brazing. Loosen the cable in the vise, tin the ends of the conductors and then butt connect the ends. Use as small a flame as possible to avoid damage to the conductors. Remove the temporary seizing as soon as a joint is made.

When all conductors of a cable are joined smooth the rough edges of the joints with a power grinder.

Clean the conductors and apply a coat of vulcanizing cement over the conductors and insulation. Wrap the bare wires with cured neoprene, lapping the original insulation by  $\frac{1}{2}$  in. Coat the uncured neoprene with vulcanizing cement and cover with a

coat of cured neoprene tape. Apply a coat of rubber cement and then wrap the conductors for the full length with uncured neoprene. Coat with neoprene cement.

Apply a neoprene breaker strip over the neutral conductor and along the inside of each conductor. Pull the splice taut and clamp in the vise. Wrap one coat of neoprene tape around all three conductors.

Clean the buffed ends of the outer jacket with naphtha or some similar cleaning fluid and then apply a coat of neoprene cement. Apply strips of neoprene compound around the splice to the desired thickness.

Place splice in mold and cure at 300 F for 30 to 50 min, depending on the size and type of cable.

### Plastic Splicing

Special care is required in making a splice with plastic material, beginning immediately after the temporary splice is cut out. The steps recommended at the Davidson shop are as follows:

First cut off the outer portion only of the outer jacket surrounding the conductors. Pull the main conductors free from the center insulation which is left intact around the ground wire. Then cut the jacket insulation around the ground wire at least 1 to 2 in nearer the end of the cable than

conductor insulation was stripped.

Buff this center section of the jacket to a conical shape. Mr. Davidson says that this conical-shaped portion surrounding the ground wire is extremely important in getting a good bond between the new and old plastic.

After brazing the conductors together as previously described for neoprene splicing, cover the entire splice area with special cement. Place an electric heater with blower fan facing the splice. Wrap each conductor with the desired thickness of plastic compound, tacking the ends with a soldering iron. Then wrap the splicing plastic around all three conductors to the desired thickness to fill the mold.

Cure in the mold at 325 F for 20 min or more, according to the size of the cable. After releasing the pressure on the mold, slide it out part way and then place it in a C clamp. Then dip the mold in water to set the plastic. Remove the mold as soon as it is cool.

### Plastic to Neoprene Splicing

Mr. Davidson says that he frequently makes plastic splices in neoprene cable and gets excellent results. The only special procedure required is that the splice area to be covered with plastic be coated with the special plastic cement which is used in making plastic-to-plastic splices.

## Third Overload Relay for Three Phase Motor Starters?

THE PROS AND CONS OF the third overload relay question were recently discussed by R. A. Gerg, Control Dept., Allis-Chalmers Mfg. Co. While two-phase overload protection is standard for three-phase motor starters, Mr. Gerg noted that there has been considerable agitation to revise the codes to require a third overload relay on all low-voltage motor starters.

Some engineers have been emphatic in their belief that the majority of motor controls should have three-

relay overload protection, while others remain neutral but point out possible conditions that might require such protection. A third group feels that the additional relay involves a needless expense since there are few occasions when three relay overload protection is required.

### Partially Protected Motor Is Vulnerable

The three-phase overload-protection question involves a number of possible motor circuits in which

two overload relays do not provide complete protection.

The most talked-about situation in which two overload relays could prove inadequate involves motors fed from either delta-Y or Y-delta transformers having isolated neutrals. In this type of application the current in one phase of the motor could be as much as twice that in the other two phases if one primary line of the transformer is opened by fuse action or other cause. If the phase with the high current is not one of the two protected by standard overload protection the motor phase winding will be damaged.

With the same transformer connection but with a delta or Y motor at standstill the locker-rotor current in one phase through the motor control would be 100% normal three-

Abstracted from Allis-Chalmers Electrical Review, First-Quarter Issue, 1959.





**NEW MOTOR-STARTER** designs make it easy to add third overload relay.

phase locked-rotor current, while the other two phase lines would carry only 50% normal three-phase locked-rotor current.

With the high current in the unprotected line, the motor overloads would not operate fast enough to protect the motor.

Less commonly considered is another problem with the Y-delta and delta-Y transformers that results from unbalanced primary voltages. In this case a 2% overvoltage unbalance in one phase of the primary can result in a 15% overcurrent in one phase of the motor. Normal overload relays are selected for 125% full-load motor-current trip. The additional 15% could mean 144% current in the one phase. Voltage unbalances of greater than 2% are quite common. With only two overload relays the high current may occur in the unprotected phase.

### Single-Phasing Side Effects

Under certain load conditions a small three-phase motor having two-relay overload protection and operating in parallel with a larger motor can also become a problem if one line of the power system supplying the motors is opened. The larger motor will supply power to the smaller motor, and one phase of the smaller motor will carry an overload

## Approximate Costs of Heater and Third Overload Relay Installed in Starters

Control Size	Motor Hp at 440 V	List Price of Control	Motor List Price for 440 V, 1,800 RPM	Cost of Motor, Control	Cost of Heater, 3rd O. L., Factory Installed	Percent Extra Cost for 3rd O. L.
0.....	5	\$ 39	\$ 212	\$ 251	\$ 6	2.4
1.....	10	44	372	416	6	1.5
2.....	25	84	628	712	10	1.4
3.....	50	138	1,122	1,260	25	1.9
4.....	100	308	2,190	2,498	40	1.6
5.....	200	684	4,514	5,198	70	1.4

while the other two lines will carry about normal or lower current. If the overloaded phase is unprotected the motor will be damaged.

In a similar circuit a single-phase load across two lines of a three-phase motor can cause a similar unbalance if the supply is single-phased. The unprotected line of the motor might be carrying an overcurrent with a two-relay-overload control, resulting in motor damage.

For complete motor protection three overload relays are generally specified when:

1. The motor is driving vital machines.
2. The motor is unattended.
3. Y-delta or delta-Y transformers supply the motor.
4. The transformer connections are not known.

5. Motors are operated in parallel with other motors or loads that might cause phase unbalance.

6. Local electrical codes require.

One utility reported that within a 1-yr period there were 300 known cases of motor burnouts on its system resulting from single-phasing. The same utility reports that it suspects many additional unreported cases within the same period. Since the cost of the additional overload relay is usually less than 2% of the combined cost of a motor and starter, the addition may prove good insurance. Approximate increased costs are shown in the accompanying table.

New motor-starter designs make it easy to add the third overload relay. If the motor circuit arrangement is not clearly free of possible single-phasing or unbalance problems it may be economical to take advantage of this versatility.

## Measuring Motor Temperature

**HOW CAN YOU TELL IF A MOTOR IS TOO HOT?** The answer is not simple. In the first place the question raises five other questions:

1. What is the internal temperature of the motor windings?
2. What is the ambient temperature in which the motor is operating?
3. How are you measuring temperature?
4. What is the type of motor enclosure?
5. What type of insulation is on

the winding?

To know whether a motor is running too hot you must know the temperature of the internal windings at their hottest spot. That is where the insulation gets its roughest treatment from heat and also where it will be destroyed first.

But, as a practical matter, you cannot get at that spot. So you have to use other facts about temperature to figure out how hot the internal windings really are. Once you know you can compare the temperature of your motor's internal windings with the "maximum-allowable temperature" for such a motor. Here are the maximum-allowables for the three main classes of insulation:

## Maintenance Ideas

### Guide to Motor Temperatures

Class of Enclosure Motor		Ambient Temperature	Temperature Rise	Hot-Spot Allowance	Maximum Internal Temperature
A	Open .....	40	50	15	105
	Totally enclosed .....	40	55	10	105
B	Open .....	40	70	20	130
	Totally enclosed .....	40	75	15	130
H	Open .....	40	110	30	180
	Totally enclosed .....	40	115	25	180
	(fan-cooled) .....	40	115	25	180
	Totally enclosed (non-vent) .....	40	120	20	180

All temperatures in degrees Centigrade.

Class A .....	105 C
Class B .....	130 C
Class H .....	180 C

These figures are the result of considerable study and afford a satisfactory life expectancy of approximately 7 yr for the insulation. Operate motors at lower temperatures and you can expect longer life out of your motor insulation. On the other hand, exceed these temperatures and you will get appreciably shorter life.

In support of this statement the familiar "10-deg rule" has long been used by operating men. For every

10 deg above the ratings listed you cut the life of your motor insulation in half. Once the insulation is destroyed you can expect grounds and short circuits to blow fuses. In some cases the motor will catch fire and burn up. In either case a rewind will usually be necessary, thus increasing maintenance cost.

#### Internal Operating Temperature

The temperature in the heart of the motor is the sum of three figures:

1. **Ambient temperature**—which is the temperature of the air immediately surrounding the motor.

2. **Temperature rise**—which is the number of degrees that the hottest part of the winding accessible for thermometer measurement rises above the ambient temperature. This is the temperature rating that is generally stamped on the motor nameplate.

3. **Hot-spot allowance**—which is the difference that can be expected between the hottest inaccessible part of the motor winding and the hottest accessible spot. (Of course, the inaccessible spot of the winding will be the hotter of the two.)

Adding the three temperature figures that you now have you get the internal operating temperature of the motor. Is it too hot? You can quickly tell by matching it against the maximum allowable temperature of the insulation. The hot-spot allowance is fixed for various insulations and types of motor enclosures. Note accompanying table which lists hot-spot allowance and maximum internal temperature for the different classes of motor.

Abstracted from *Factory*, a McGraw-Hill publication.

## Maintaining Your Welding And Cutting Outfit

THIS TITLE introduces a feature offering simple rules for maintenance and inspection of welding and cutting outfits which appeared in a recent issue of *Linde Tips*, published by Linde Air Products Co., a division of Union Carbide & Carbon Corp. These rules will add life and performance to welding equipment as well as increase safety during their use.

### Testing for Leaks

Before a new outfit is used and at frequent periodic intervals afterward equipment should be tested for leaks. The outside points are easily checked by brushing a solution of clean water and grease-free soap over the leak testing points shown in Fig. 1. If leaks are found use the following procedures to stop them.

**Leakage at the Cylinder Valve Stems**—If the oxygen cylinder valve stem leaks close the valve and return cylinder to your supplier properly tagged and marked. Be sure the valve is opened all the way when the test is made. If the acetylene cylinder valve stem leaks clean the valve and tighten the packing nut. Open the valve about 1½ turns and test again. If it still leaks move the cylinder outdoors. Attach a tag saying that the valve leaks and warn everyone not to come near it when they have a lighted cigarette or any other source of ignition. Ask your supplier to pick up the cylinder.

**Leakage at the Regulator Inlet Connection**—Close the cylinder valve and disconnect the regulator. Clean and examine all connections for damage. If damaged send the regu-

### Welding Tip Cleaning Drill Sizes

Tip Size No.	Drill Size
2	75
6	60
15	53
20	50
30	44

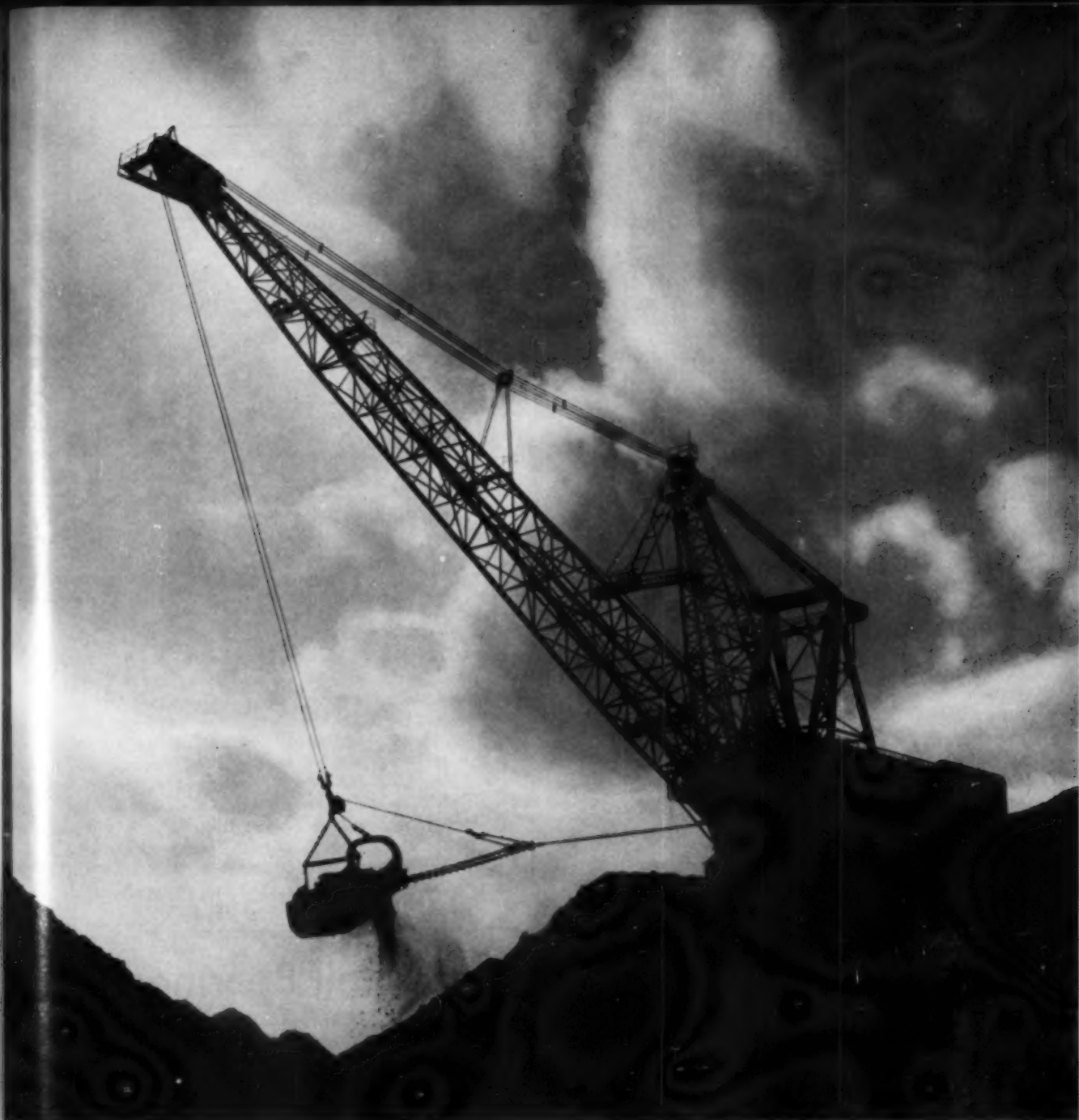
### Cutting Tip Cleaning Drill Sizes

Tip Size No.	Drill Sizes	
	Preheat	Cutting
2	77	76
3	75	68
4	73	60

lator back to your supplier for repair. If the cylinder connection is marred return cylinder to your supplier.

**Leakage at the Holes in the Regulator Caps**—A bubbling at this point indicates that the regulator diaphragm is leaking. Close the cylinder valve and disconnect the regulator. To replace the diaphragm remove the regulator cap by inserting two pieces of ¼-in drill rod in the vent holes and use them as a handle to unscrew the cap. Next, remove the spring washer, spring, diaphragm ring and diaphragm.

Holding the body with the gage



**"Angeline" Rounds Out 2nd Year of Service.** Meet "Angeline"—a Bethlehem-wire-rope-equipped dragline excavator, the latest addition to the coal-stripping equipment operated by Pennweir Construction Co., Weirton, W. Va. This mine is rounding out 21 years of continuous service near Florence, Washington County, Pa. The excavator was photographed recently on 62-ft overburden with a 33-cu-yd drag bucket. The twin hoist lines, each 477 ft long, are  $2\frac{1}{8}$  in. 6 x 41 improved plow steel, lang lay, IWRC. The twin draglines, each 285 ft in length, are  $2\frac{5}{8}$  in. 6 x 25 Type W, improved plow steel, lang lay, IWRC. Despite long and hard usage, both types of Bethlehem rope have been providing excellent service—the kind that gets the job done at the lowest possible cost.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

*Export Distributor: Bethlehem Steel Export Corporation*

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**BETHLEHEM STEEL**





## Maintenance Ideas

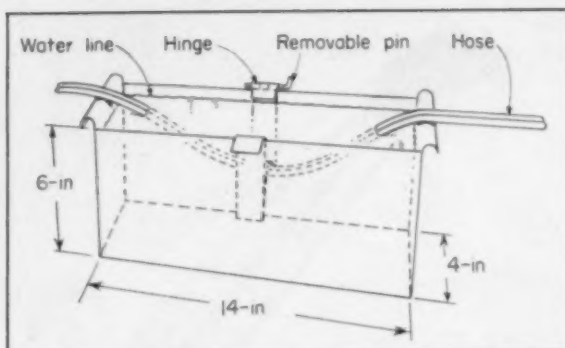
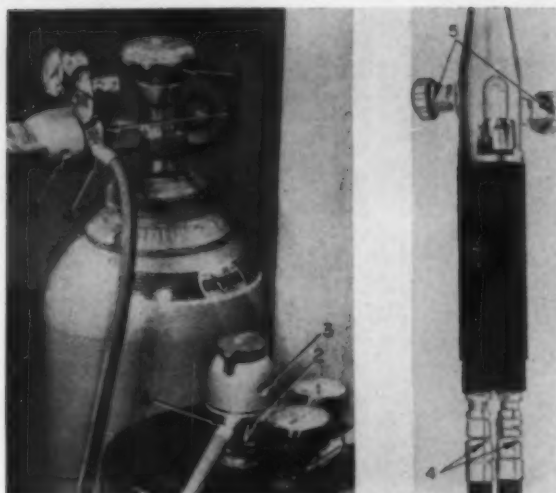


FIG. 1—Leak testing points: 1, cylinder valve stems; 2, regulator inlet connections; 3, regulator caps; 4, hose connections; 5, blowpipe valve stems.

FIG. 2—Test hose in a tank like this or pass the hose through a pail of water.

faces upward install a new diaphragm, diaphragm ring, spring and spring washer. Screw on and tighten the regulator cap. Check.

Open the cylinder valve to blow out any dust, then attach the repaired regulator to the cylinder, making sure the nut is tight. Open the valve and block off the regulator outlet with your thumb. Adjust the working pressure to about 10 psi on the acetylene regulator and about 25 psi on the oxygen regulator. Test for leakage between the regulator cap and regulator body. Test the diaphragm for leaks by brushing a film of soapy water over the vent holes. If the regulator still leaks return it to your supplier.

**Leaks at the Regulator and Blowpipe Hose Connections**—Shut off the regulators and disconnect the hose. Clean and examine the connections for damage. If the hose connections are damaged replace the parts, reconnect the hose, tighten with an open-end wrench and turn on the regulators. If the regulator or blowpipe connections are damaged return the part to your supplier.

**Leaking Hose**—The best way to test the hose is to immerse it in water. If leaks are detected replace with sections and splice with a hose coupling. Do not use tape.

**Blowpipe Valve Stem Leakage**—Leakage at this point can often be eliminated by tightening the packing nut with a wrench. If this fails replace the valve packing washers.

**Leaks at the Blowpipe Valve**

**Seats**—Immerse the blowpipe tip in water. If bubbling occurs it indicates leakage through one or more of the blowpipe valves. Determine which valve is leaking. Then shut off the oxygen or acetylene at the regulator. Take the faulty valve apart and clean the end of the valve stem and the seat of the valve body. If there is any damage return the part to your supplier. Otherwise, reassemble the part, turn the valve on and off a few times, and tighten the packing nut with an open-end wrench. If the leak continues take the blowpipe to your supplier for repair.

## Cleaning Welding and Cutting Tips

Check your welding or cutting tips frequently to make sure they are not clogged. Always clean them by hand, using cleaning drills of the correct size or a copper or soft brass wire of suitable size. Do not use regular bits for wood or metal. Normally the blowpipe will not need any form of periodic maintenance or constant inspection, other than the points previously covered. The accompanying table shows correct drill sizes for various welding and cutting tips.

## How to Check Ball Bearings

SUBSTANTIAL SAVINGS can be effected by adopting a proper method for determining if a bearing should be replaced. Replacement of bearings without sufficient indication of need can increase cost of repairs, often resulting in loss of production. On the other hand, if a bad ball bearing is not replaced, early breakdown of the machine is almost assured. It is very important, therefore, to carefully check the condition of ball bearings.

### Bearing Design

Although antifriction bearings are excellent in application they provide maintenance problems not encountered with sleeve bearings.

Fig. 1 shows two views of a typical ball bearing. Each ball in the bearing is rolling between surfaces of two raceways. Because the diameter of the two raceways is necessarily different, some sliding action is introduced into the rotation of the balls. Each ball rotates with a speed which is not the speed of the inner or outer raceway, but a different one, resulting in friction between itself and the raceways.

In any ball bearing there must be space between the balls to prevent rubbing friction. If the separation device did not keep a fixed distance between each pair of adjacent balls they might group together in one section, causing excessive friction among themselves. To eliminate this "crowding effect," a separator is

Condensed from *Electrical Construction and Maintenance*, a McGraw Hill publication.



# YOU'LL NEVER BURN OUT AN AIR TOOL

*with the  
new Le Roi LO-380  
line oiler...*

**EMPTY OILER  
SHUTS OFF AIR!**

That's right! You'll never burn out an air tool with the new Le Roi LO-380 on the job! When the oiler runs dry, it automatically shuts off the air! The "no oil — no air" design prevents unnecessary wear on critical parts — cuts repair bills — extends tool life!

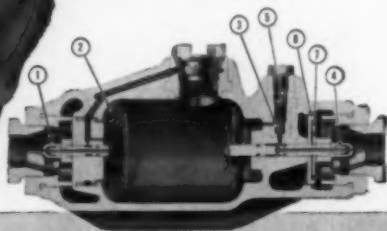
The new line oiler assures positive lubrication for air tools — delivers a steady mist of oil at 10 to 150 psi — and keeps it flowing until you shut the air off, or until the empty oiler shuts it off automatically. Metered oil flow provides exceptional economy, prevents oil splurges. As a matter of fact, the LO-380 will pay for itself in a short time through oil savings alone!

Oiler permits easy external adjustment of oil feed — provides full one-pint capacity. Lightweight — only 9 lbs. — it's easy to use, easy to move — operates in any position. Oiler can be refilled under pressure while air tool is in operation.

Contact your nearest Le Roi distributor for details — or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

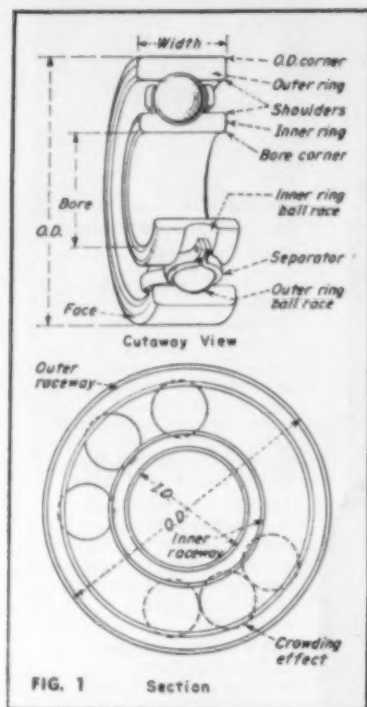
## Here's how the LO-380 Saves Tools— Cuts Repairs!

- (1) Inlet reed valve meters air into the oil-resistant bellows
- (2) which creates pressure that forces regulated amount of oil through porting connected to the needle valve (3) and the porting connecting it to the outlet reed valve
- (4) through which oil is injected into the air stream.
- (5) Set screw permits easy external adjustment of oil feed during operation.
- (6) Positive pressure differential valve assures correct oil feed for all air flows — eliminates oil waste.
- (7) Shut-off valve automatically stops air when oiler is empty. As oil supply goes down, bellows (2) expand and contact the shut-off plunger, depressing it until the valve reaches the automatic shut-off position.



**LE ROI  
NEWMATIC®  
AIR TOOLS**





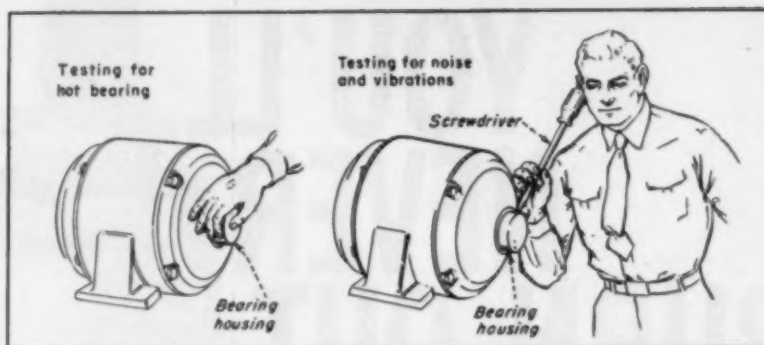
designed into a ball bearing. Separating rings keep the balls in their proper position, although more friction is added by the rubbing between each ball and the guiding surface of the retainer or cage, as a separator is commonly called.

### Lubrication

Because of the friction developed in bearings a lubrication is required. The balls are required to carry a very heavy load. At any particular moment only a few balls bear the total weight of the rotating part of the machine. And in addition to minimizing the friction developed the lubricant in a ball bearing must prevent corrosion.

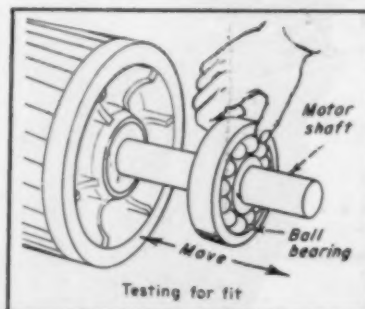
Lubricant used for ball bearings should not deteriorate or oxidize during the period of its useful life. Such oxidation will have a bad effect on the bearing. When grease is used as the lubricant it may become tacky and discolored. Sticky substances formed in this way adhere strongly to the inside of the bearing structure, retarding rotation of the balls. If a ball gets frozen in its position it wears quickly. For these reasons care must be taken to select the proper lubricant and to apply it correctly.

Antifriction bearings do not require



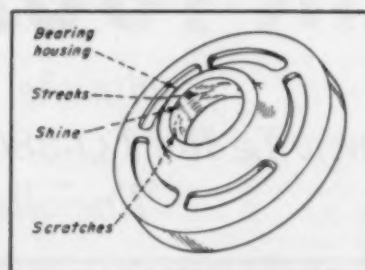
**1 PRELIMINARY EXAMINATION** to detect faulty bearing operation. The most common indicators of faulty operation are high temperature and unusual noise. A simple test for overheated bearings consists of putting a hand on the bearing housing. If the hand can withstand the heat of the running bearing it is likely that it is not dangerously overheating. To test for unusual noises place the business end of a screwdriver in contact with the bearing housing and put an ear to the handle end. An experienced and trained ear will detect any unusual or alarming noises or vibrations. The screwdriver in this test transmits and amplifies the noise through its metallic length. There also are special devices, including stethoscopes, made for this purpose.

## Five Steps to Better Bearing Inspection



**2 CHECKING CONDITION** of bearing and its fit on a shaft. If, after Step 1, a decision is made to dismantle the bearing housing the end bells are taken off the motor and the ball-bearing housing is taken apart. The motor shaft and bearing raceways should be examined visually for obvious defects or wear. Scratches, scars and the like are indications of abnormal conditions, such as, spinning of raceways in housing, wear on shaft, etc. To test for proper fit, the bearing is first placed on a section of the shaft where it is normally located. Then by rotating the bearing an experienced hand can tell if the fit is proper. Calipers can be used to measure the inside of the bearing and the outside diameter of the shaft to see if bearing fit is proper.

much lubrication. In fact, over-lubrication is one of the most common causes of bearing failure. More bearings are running hot because of over-lubrication than because of under-lubrication. When grease is used the housing should not be filled up but rather just to between one-



**3 EXAMINING BEARING HOUSING** in motor end-bell. As followup to visual inspection of the shaft and bearing raceways the surface of the bearing housing should also be checked for scars or scratches which indicate rubbing between the surface and the outside of the outer bearing raceway.

third and one-half full so that the grease level is high enough for the lower balls to pass through. If too much grease is used it will tend to churn. And expansion of the lubricant due to high temperature may force oil seals to give, allowing the lubricant to escape.

The right type of lubricant for any bearing is determined during design of the bearing. Lubricating grease consists of oil and a binder. The purpose of the binder is to keep the oil in its proper place. If, through excessive heat, grease is broken down the solid matter formed as a result may interfere with action of the balls. Oil is generally used as the lubricant in bearings which operate



When you're talking  
about a \$162,000  
dipper shovel, you've got to  
talk about  
the best  
rope for it



Talking about or working with, the same thing applies. Anything below Royal Blue's performance level is simply unrealistic. Like looking for a cut-price brain surgeon.

Even at \$162,000, the cost of wire rope is important. That's why so-so ropes can cost you more in the long run, because so-so ropes are short run. Royal Blue, on the other hand, is built by America's oldest manufacturer of wire rope to last, to do the job without a whimper. Here's why.

Royal Blue is made from the toughest rope wire ever made—Type 1105—extra high-strength improved plow steel. This pedigree gives to the rope qualities that you can't find in any other rope: exceptional resistance to shock, abrasion, fatigue and impact. Add to these a flexibility that age cannot wither nor hustling fade and you've got a collection of characteristics that make Royal Blue the strongest rope you've ever used.

A \$162,000 Dipper Shovel deserves the best and your Roebing Distributor has it... Royal Blue. Any inquiries about this high-born rope will be answered immediately by Wire Rope Division, John A. Roebing's Sons Corporation, Trenton 2, New Jersey.

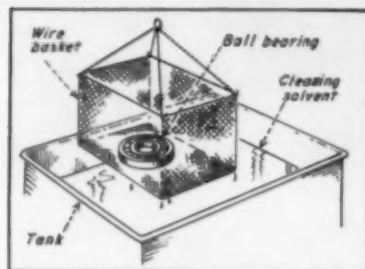
**ROEBLING**



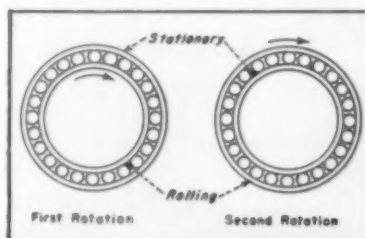
Branch Offices in Principal Cities • Subsidiary of The Colorado Fuel and Iron Corporation



## Maintenance Ideas



**4 CLEANING BEARING** before detailed examination of its condition. Before a bearing can be properly examined it must be cleaned of oil, grease, dust and other foreign particles. A quick and effective way to clean bearings is to place them in a wire basket and dip them up and down in a tank of cleaning solvent. After cleaning in the tank dirt and other particles loosened by the solvent can be blown away with compressed air. It is advisable to filter the air supply used in this operation; otherwise damage might be inflicted to the bearing.



**5 INSPECTION OF BEARING** after thorough cleaning. The clean bearing should be visually inspected for obvious defects. Broken balls or broken or defective retainer rings can be found this way. The bearing should be rotated in the hand, first holding the inner raceway stationary and then the outer raceway, observing the action on both sides of the bearing. This rotating will uncover uneven tolerances in the bearing. If positive evidence of defect is found in this way the bearing should be condemned. If doubt still exists an additional test can be made. This consists of using compressed air from a nozzle to spin the bearing. A few drops of light oil should be added to the bearing surface for this test. A trained ear can detect any unusual or abnormal noises in the spinning bearing. By practice and experience, this test can be used as a final indicator on keeping or discarding a bearing.

at higher temperatures. In such cases substitution of grease for oil would deteriorate bearing operation. Oil as a lubricant is more stable than grease but it must be replenished more often and must be properly sealed. A repairman, however, should never change the type of lubricant used in a bearing.

Many factors may bring about failure of ball bearings. Some are: high temperatures, dirt, dust, moisture, fumes, wrong fit, wrong lubri-

cant, excessive pressure, uneven tolerances, defective materials, corrosion, improper installation of oil seals, and carelessness during handling.

## Glossary of Electrical Terms

WHEN YOU USE the word "explosionproof" do you really mean "totally enclosed?" For the correct definitions check the following list of electrical terms. They have been approved by American Standards Association, Bulletin C42.95, published by American Institute of Electrical Engineers.

**Gasproof**—Apparatus so constructed or protected that the specified gas will not interfere with successful operation.

**Gastight**—So constructed that the specified gas will not enter the enclosing case under specified conditions or pressure.

**Dustproof**—So constructed or protected that dust will not interfere with successful operation.

**Dusttight**—So constructed that dust will not enter the enclosing case.

**Moisture-repellent**—So constructed or treated that moisture will not penetrate.

**Moisture-resistant**—So constructed or treated that exposure to a moist atmosphere will not readily cause injury.

**Semi-enclosed**—(a) Means having the ventilating openings in the case protected with wire screen, expanded metal, or perforated covers. (b) Means having a solid enclosure except for a slot for an operating handle or small openings for ventilation, or both.

**Totally enclosed**—So enclosed as to prevent circulation of air between the inside and the outside of the case but not necessarily sufficiently to be termed airtight.

**Enclosed - ventilated apparatus**—Apparatus totally enclosed except that openings are provided for the admission and discharge of the cooling air.

**Note:** These openings may be so arranged that inlet and outlet ducts or pipes may be connected to them.

An enclosed ventilated apparatus or machine may be separately ventilated or self-ventilated.

**Totally-enclosed ventilated apparatus**—Apparatus totally enclosed in which the cooling air is carried through the case and apparatus by

means of ventilating tubes and the air does not come in direct contact with the windings of the apparatus.

**Explosionproof apparatus**—Apparatus enclosed in a case which is capable of withstanding an explosion of a specified gas or vapor which may occur within it, and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes or explosion of the gas or vapor within; must operate at such an external temperature that a surrounding flammable atmosphere will not be ignited.

**Flameproof apparatus**—Apparatus so treated that it will not maintain a flame or will not be injured readily when subjected to flame.

**Fire-resistant**—Means so constructed or treated that it will not be injured readily by exposure to fire.

**Flame-retardant**—Means so constructed or treated that it will not convey flame.

**Metal-clad**—Means that the conducting parts are entirely enclosed in a metal casing.

**Accessible** (as applied to wiring methods)—Accessible means not permanently closed in by the structure or finish of the building; capable of being removed without disturbing the building structure or finish.

**Accessible** (as applied to equipment)—This means admitting close approach because not guarded by locked doors, elevation, or other effective means.

**Readily accessible**—Means capable of being reached quickly, for operation, renewal, or inspection, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc.

**Exposed** (as applied to equipment)—Exposed means that an object or device can be inadvertently touched or approached nearer than a safe distance by any person. It is applied to objects not suitably guarded, or isolated.

**Exposed** (as applied to wiring methods)—Exposed means not concealed.



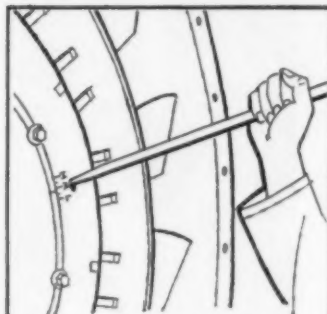
# JOY MINE FANS

One fan for the life of the mine . . . adjustable blades  
are turned to change volume and pressure

Adjustable blades, standard on all Joy Axivane® mine fans, make it possible to select one fan for the *life of the mine*. As system characteristics change with advance or retreat, the pressure range and the operating range may be varied by simply changing the pitch of the blades. The greater efficiency of this system greatly affects both power cost and total cost of mine ventilation.

You also save because: All Joy mine fans are shipped from the factory permanently mounted on their own steel sub-base. Installation is fast and easy because intricate concrete forms are not required. All bearings are mounted at the factory, and require no mounting or adjustment at the site.

If you are planning primary ventilation, make sure you talk to Joy . . . pioneer builders of vaneaxial mine fans.



To change blade pitch you loosen a few lock-nuts, insert an adjusting lever, and set blade pitch. Removing the lever and tightening the lock-nuts completes the job.

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Photo shows two Joy mine fans at a new mine in northern W. Va.



AIR MOVING EQUIPMENT FOR ALL INDUSTRY



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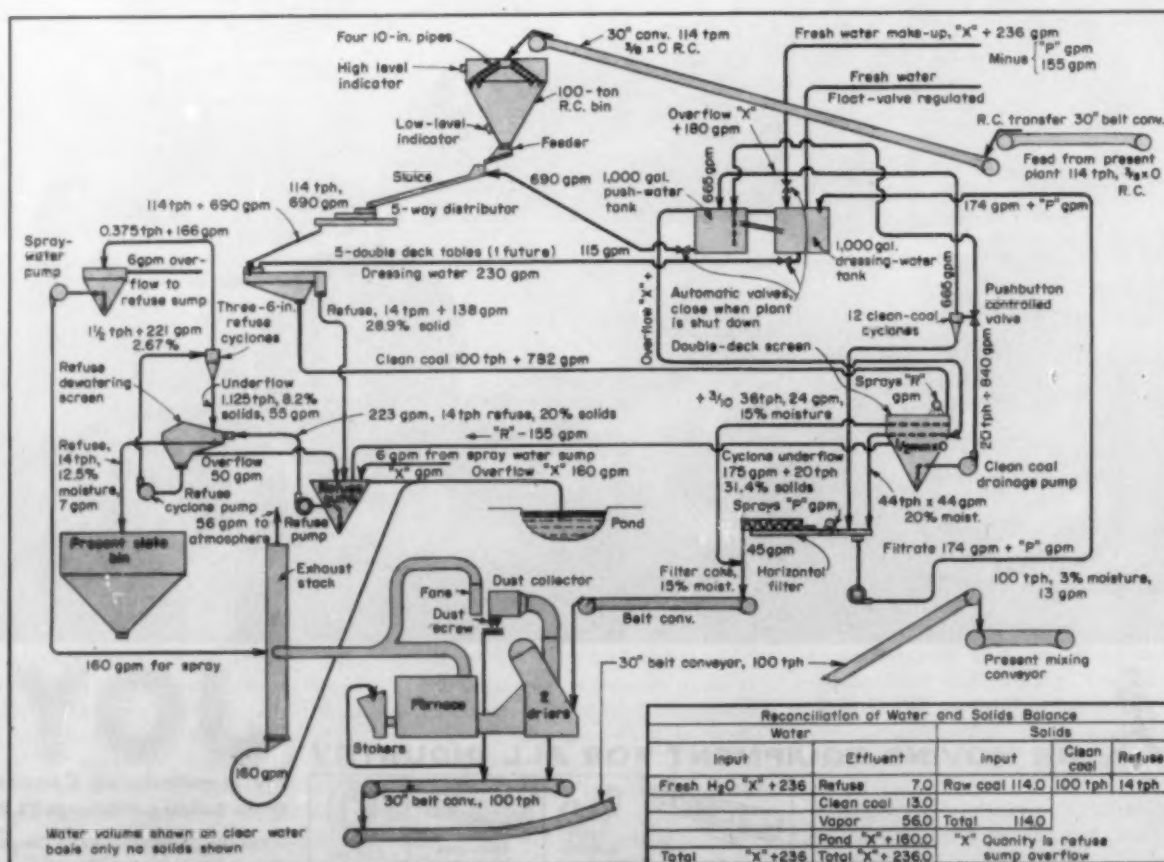
Joy Manufacturing Company  
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company  
(Canada) Limited, Galt, Ontario



FINE-COAL cleaning facilities added at Island Creek's Wyoming plant upgrade  $\frac{3}{4} \times 0$  to premium metallurgical product with 2.5% ash and 0.55% sulphur. Gentle handling of fragile coal keeps degradation to a minimum.

## Upgrading Fragile Coal to Premium





**TIGHT QUARTERS** at coarse cleaning plant forced company to build fine-coal section across the road. Two belt conveyors link fine- and coarse-coal facilities.

## Metallurgical Product

Gentle handling and gravity flow to minimize degradation, plus coal's largest horizontal filter, mark Island Creek's Wyoming fine-coal plant.

KEEPING degradation of soft, friable  $\frac{3}{8}$ x0 Sewell Coal to a minimum while upgrading it to a premium metallurgical product was a formidable problem to overcome at the Wyoming plant of the Island Creek Coal Co., 5 mi south of Pineville, W. Va. New fine-coal preparation facilities employ gravity material flow as much as possible and gentle handling within the preparation units themselves to minimize degradation.

Raw coal flows to the fine-coal plant by belt conveyor, is washed on Concenco "77" twin-deck tables, de-watered by the largest Oliver horizontal rotary filter in the coal industry, dried in Multi-Louvre heat driers and then reconveyed to the loading point in the coarse-coal plant.

The clean  $\frac{3}{8}$ x0 has 2.50 to 2.80% ash and 0.55% sulphur and is a pre-

mium metallurgical coal. A typical screen analysis of the raw and clean coals shows that the maximum degradation is only 4.28% and is in the  $\frac{1}{4}$ x $\frac{1}{8}$  size. Degradation of the other size fractions of the  $\frac{3}{8}$ x0 composite is shown in the accompanying table.

Island Creek added the Wyoming operation to its holdings in January, 1956, and shortly thereafter initiated plans to clean the  $\frac{3}{8}$ x0 which was being sold raw to the utility market. Washability studies of the fines showed clearly that a high-grade metallurgical product with 2.50% ash and 0.55% sulphur could easily be obtained with available fine-coal cleaning methods. Because of the friable nature of the coal, however, special attention was given to the plant design so that a minimum of degradation would be created in cleaning, drying and conveying operation.

Aside from the degradation problem in designing the new plant there

was insufficient space on the hillside adjacent to the old plant for the new addition. As a consequence the fine-coal facilities had to be fitted into an area across the road from the plant. By locating the plant on the flat land the plant designers had to include raw- and clean-coal-conveyor links with the old plant.

Certain changes also were required in the original plant. For example, the  $\frac{3}{8}$ x0 which previously had been loaded raw had to be screened into  $\frac{3}{8}$ x $\frac{1}{2}$  and  $\frac{3}{8}$ x0 fractions. The larger material would go to the jig washer in the old plant and the  $\frac{3}{8}$ x0 would be cleaned in the new facilities. After being cleaned separately, the coals would be recombined and loaded as  $\frac{3}{8}$ x0.

Island Creek signed a contract with the Nelson L. Davis Co. for the design and construction of the new 100-tph fine-coal plant in February, 1957. Construction began in June, 1957 and the plant went on stream March 25, 1958.

The Wyoming plant processes 2,000 tpd of Sewell coal containing 12% refuse in two-shift operation. About 60% of the raw feed is  $\frac{3}{8}$ x0 which is processed in the new fine-coal section to yield 1,044 tons of clean  $\frac{3}{8}$ x0 in two shifts. On April 1 of this year Island Creek began sending an additional 800 tons of raw  $\frac{3}{8}$ x0 from Marianna mine which is also in the Sewell seam, through the Wyoming plant on the third shift. Nearly 95% of the Marianna coal is  $\frac{3}{8}$ x0 and is also upgraded to metallurgical quality in the fine-coal plant.

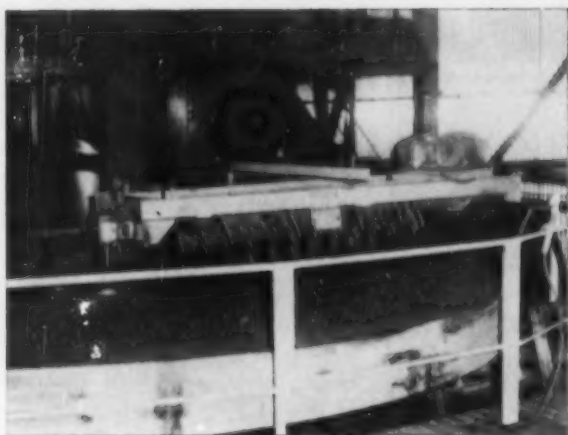
### Fine-Coal Cleaning

The  $\frac{3}{8}$ x0 enters the fine-coal plant on a 30-in belt conveyor that discharges it into a 100-ton bin high in the plant. A four-way distributing device made up of four 10-in pipes keeps segregation to a minimum in the bin. A manual rheostatically controlled Syntro feeder discharges the raw  $\frac{3}{8}$ x0 into a flume where it is wetted with overflow water from a battery of Dorr-Oliver 6-in cyclones and then conveyed to a revolving distributor.

The coal is uniformly distributed to five Concenco "77" twin-deck tables making a separation into clean coal and refuse. Clean coal flows by gravity over a stationary actuated 1-mm stainless steel sieve which re-

**FLOW DESIGN** features gentle handling of product as it moves to wet tables, filter, and drier.





**HORIZONTAL FILTER**, largest of this type in the coal industry, reduces moisture on clean coal to 14%. Coal is deposited on filter in two layers to get good seal.

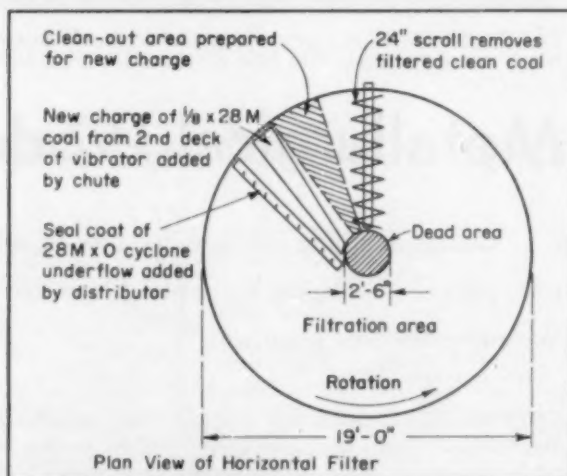


**REVOLVING SCROLL**, 24 in in diameter, removes dewatered coal at discharge zone and delivers it to belt conveyor that carries it to heat driers. Scroll rotates at 155 rpm.

## Coal's largest horizontal rotary filter dewateres 1/8x0

### Size Consist of Filter Feeds and End Product

Size	Feed, Bottom 6 In. Cyclone Deck, Vibrator, Underflow,		Discharge Product,	
	27.41% Surf. Moist., % Wt.	55.35% Surf. Moist., % Wt.	16.25% Surf. Moist., % Wt.	
+3 $\phi$ .....	0.05	...	0.15	
3/8 x 1/4 $\phi$ .....	1.26	...	1.40	
1/4 x 3/8 $\phi$ .....	24.61	...	16.85	
1/4 x 14M.....	31.21	8.00	21.75	
14 x 28M.....	24.25	13.55	19.74	
28 x 48M.....	10.42	29.45	17.54	
48 x 60M.....	1.26	5.00	2.83	
60 x 100M.....	2.57	21.55	9.56	
100 x 200M.....	1.43	11.60	5.40	
-200.....	2.94	10.85	4.78	



**DISCHARGED COAL**, picked up from belt by 24-in scroll, falls into short chute over 30-in belt and lands on top of 3/8x1/4 dewatered on vibrator.

moves a portion of the water before the coal passes to an Allis-Chalmers 6x16-ft vibrator equipped with Bixby-Zimmer Isorod screen on the top deck and 1/2-mm stainless steel screen on the bottom deck. The vibrator makes a three-product separation into 3/8x1/4, 1/4x28M and 28Mx0.

Top-deck 3/8x1/4 clean coal normally passes to a chute and thence to a belt conveyor that carries it directly to the Multi-Louvre driers. Bottom-deck 1/4x28M coal with 27% moisture discharges to a hopper from which it is uniformly spread to a depth of 3 in on the outer 8 ft 3 in of the Oliver continuously rotating horizontal filter.

Underflow from the vibrator flows to a clean-coal sump where a Goyno pump picks it up and delivers it to a

battery of 12 Dorr-Oliver 6-in cyclones. Concentrated cyclone underflow with about 50% moisture is spread uniformly over the previously deposited 3-in layer. This second layer serves as a seal over the entire filtration area. The filter rotates counterclockwise at 33 rph.

When the rotating filter reaches the discharge area a 24-in scroll rotating at 155 rpm removes the clean-coal cake and discharges it onto a 30-in clean-coal belt which also receives the clean coal from the top deck of the vibrator. The combined product is carried to a point midway between the two Multi-Louvre driers and split into equal feeds to the units. Filtrate water is reused as dressing water on the washing tables.

Heat for the two driers is pro-

vided by a Bigelow-Liptak furnace fed by two Iron Fireman pneumatic-type stokers burning 3/8x0 coal. Extremely fine coal in the drier exhaust is recovered by two Amerclone dust collectors and then mixed with the coarser dried coal for delivery to the loading point. Air discharged from the Amerclones flows through wet scrubbers before passing to the atmosphere.

Dried coal is collected on a 30-in cross belt which discharges onto another 30-in belt that carries it back to car-loading facilities in the coarse-coal plant.

### The Horizontal Filter

The horizontal filter consists essentially of a circular pan into which are set 20 wedge-shaped sections. The pan is supported on a hardened ball race and is rotated by a sprocket and fixed-chain drive. A 10-hp 1,740-rpm induction motor provides the necessary power through a Reeves variable-speed drive which makes possible rapid and easy change of rotation speed between 17 and 52 rph.

The wedge-shaped filter sections are covered with 28x30M stainless-steel wire cloth and are so mounted that they may be easily removed for inspection, repair or replacement. Each section is a separate compartment with its own outlet to an automatic valve in the center of the pan.

A vacuum of about 10 in of mercury is provided by a Roots-Connersville Type RCDH 20x30 pump driven by a 250-hp 585-rpm induction motor. As the filter revolves the filtrate passes through the filtering medium and the suction outlet and automatic valve to a receiver. From here the filtrate is pumped back to the tables for dressing water. The filtrate contains 1.25 to 4.0% solids, 5.70% of which are above 48 mesh and 69.0% below 200 mesh.

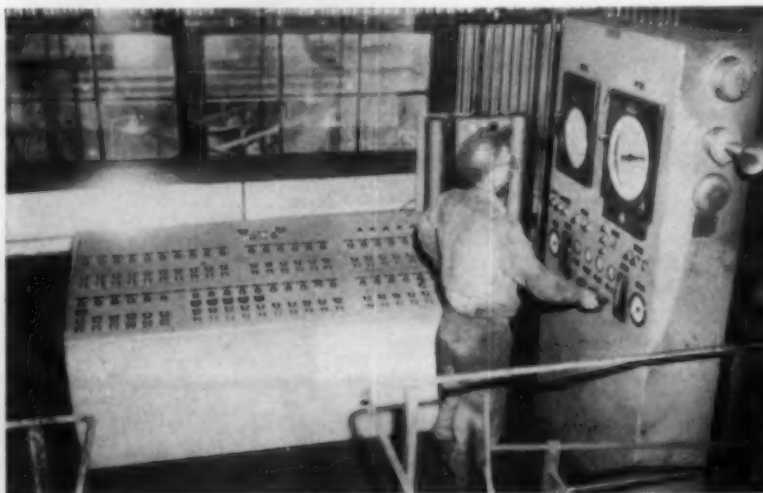
After the 24-in revolving scroll removes the cake and discharges it onto the wet clean-coal conveyor the filter moves around to the clean-out zone. Here air at 10 psi, produced by a small Roots-Connersville Type AF 710 blower driven by a 10-hp motor, is blown up through the screen surface to loosen any particles imbedded in the wire cloth. A set of fresh-water sprays provides additional help in cleaning the filtering surface. The cleaned area then is ready

## Size Consist—Raw Coal Entering and Clean Coal Leaving Fine-Coal Cleaning Plant

Size	Raw Coal		Clean Coal		Cum. Diff.
	% Wt.	Cum. % Wt.	% Wt.	Cum. % Wt.	
+3/8" Rd.....	4.88	4.88	2.38	2.38	-2.50%
3/8x1/4 Rd.....	11.41	16.29	7.69	10.07	-6.22%
1/4x1/8 Rd.....	23.78	40.07	19.50	29.57	-10.50%
1/8x14M.....	18.70	58.77	20.75	50.32	-8.45%
14x28M.....	15.30	74.07	17.79	68.11	-5.96%
28x48M.....	10.40	84.47	13.29	81.40	-3.07%
48x60M.....	1.92	86.39	2.12	83.52	-2.87%
60x100M.....	5.07	91.46	7.63	91.15	-0.31%
100x200M.....	3.12	94.58	3.61	94.76	+0.18%
200x0.....	5.42	100.00	5.24	100.00	—



TWIN-DECK TABLES, fed by revolving distributor, separate coal and rock. Clean coal flows by gravity over arcuated sieve before passing to vibrator ahead of filter.



ONE MAN controls all units in the fine-coal washing and drying section from central panelboard. Only one other man, doing utility work, is needed to operate plant.

# acker

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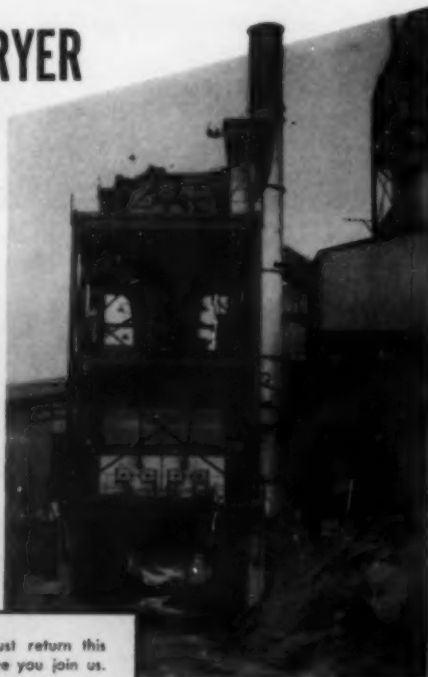
## H&P FLUID BED DRYER

Have you seen the new H & P Fluid Bed Dryers in operation?

Over one hundred coal preparation men attended H & P seminars and field inspection trips. The flawless operation of these H & P Fluid Bed Dryers was quite impressive.

More of these meetings and field trips will be arranged in the near future to accommodate operating personnel from the following districts:

- All of West Virginia
- Central Coal Producing States
- Kentucky and Virginia Areas
- Pennsylvania Coal Fields



If you would like to participate, just return this coupon—we would be pleased to have you join us.

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Company \_\_\_\_\_

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Fluid Bed Dryer



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**ENGINEERS W. E. Valentine (left),** division preparation engineer, and Earl Boggs, chief project engineer, discuss plant operation.

to receive a new charge of wet coal.

Moisture on the filtered coal has varied from 14 to 16.75%, mainly because of fluctuation in the size consist of the feed. Highest moisture has been obtained when fines in the feed predominate and lowest when the feed is coarse. Moisture on the material from the top deck of the vibrator that bypasses the filter has varied from 12 to 13.5%.

Island Creek engineers report that operating experience to date indicates that the size consist of the feed appears to play an important part in the efficiency of the horizontal filter. Furthermore, preparing the filter surface at the clean-out area to receive the succeeding charge is extremely important. Research is underway to develop new methods of feeding coal to the filter as well as improving the clean-out technique.

### Two Man Operation

Only two men are needed to operate the new fine-coal cleaning facilities. One man controls all plant units from a centrally located push-button panelboard. The second man performs utility work including lubrication, tending drier furnaces and plant cleanup.

Among the controls that help simplify plant operation are high- and low-level Bindicators on the raw-coal bin; a pushbutton-controlled valve in the cyclone-feed circuit to keep scaling slurry off the filter until the coarse bed has built up; and automatic valves under the push-water and dressing-water tanks that close when the plant is shut down.





## **RIP RESISTANT RAY-MAN CONVEYOR BELT HAULS MORE COAL...LASTS LONGER!**

Ray-Man Conveyor Belt trains *naturally*, troughs *easily*... handles *more* coal even where small pulleys are required in low head-room operations. Special cushioned strength members, and Double-Compensation to relieve outer-ply stress, provide needed impact resistance *plus* exceptional flexibility. Ray-Man is highly rip resistant... requires *no* breaker-strip and holds fasteners better than any other belt construction. Exclusive "XDC" Cover adds additional protection against wear, tear, cuts and abrasion never before possible!

Like all Manhattan underground belts, Ray-Man is mildew-proof, moisture resistant—and available with Bureau of Mines' acceptance designation: "Fire-Resistant, U.S.B.M. No. 28-10." Ray-Man does a *better* job, *longer*... and it's *safer* to use!

Let an R/M representative show you special advantages of other R/M conveyor belts... Homocord for unusually severe-shock loading, R/M Tension-Master for extra long lifts, high tensions. There's an R/M heavy duty belt to give "More Use per Dollar" on every handling job.

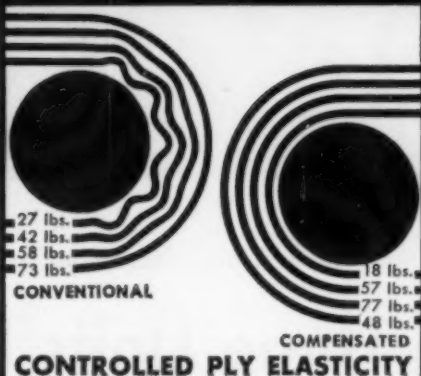
**R/M POLY-V® DRIVE**—Patented new concept "trouble-proofs" your mine drives. Delivers up to 50% more power in same space as ordinary V-belt drives... or equal power in less space! Single V-ribbed belt eliminates "matching" problems... minimizes belt and sheave inventories. Write for Poly-V® Drive Bulletin M141 today.

\*Poly-V is a registered Raybestos-Manhattan trademark.

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**STRESS-RELIEF OF OUTER PLIES  
MEANS LONGER BELT LIFE**  
*"More Use per Dollar"*



Note how Double-Compensation at right equalizes ply stresses.

1. Center plies on neutral axis and better protected carry more load.
2. Outer plies stress-relieved by adjusting to tension and compression.

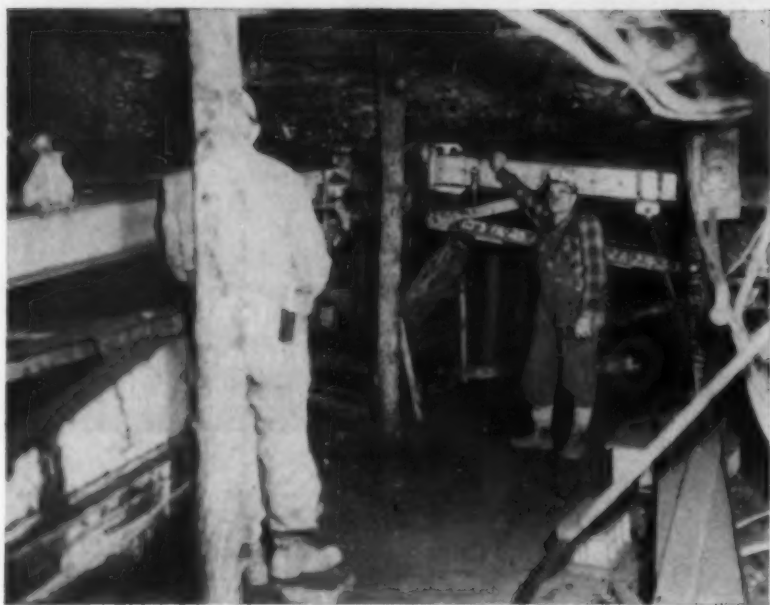
### **INDUSTRY'S ONLY COMPENSATED BELT**

Ray-Man Compensation relieves outer ply stress... allows outside ply to elongate more than inner plies as the belt flexes around the pulleys. Inner plies no longer "loaf", but carry full share of the load.

Outer ply is better able to absorb strain and impact of loading, pull as a strength member, protect the inner plies, hold fasteners or splice longer.

And, because Ray-Man is *double* Compensated—both top and bottom plies stress-relieved—Ray-Man Compensation prolongs belt life, even where operated over reverse bend, snub or take-up pulleys!





Entry-development unit and two room-panel units feed coal to a belt conveyor system that converges at a single loading point. Lower labor requirements and smoother haulage are results. Ventilation improvements increase safety and economy.

**POINT OF CONVERGENCE** of entry and panel belts with transfer conveyor brings together the production of three conventional units at carloading point.

Ingle Coal Corp. increases overall efficiency by having . . .

## Three Units Feed One Loading Point

OFFICIALS of Ingle Coal Corp., Elberfeld, Ind., recently converted underground operations at the company's Ditney Hill mine from a two-shift to a single-shift basis and instituted changes in methods to achieve maximum efficiency in response to present market conditions. The biggest boost in efficiency has

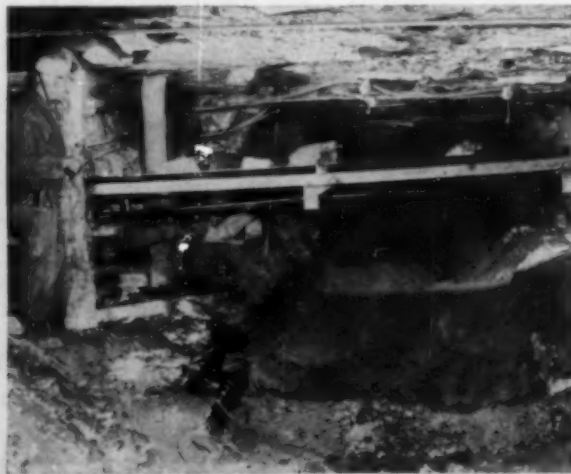
come from designing operations so that coal from the three mechanical units now in service is transported by belt conveyors to a single loading point. As shown in the accompanying diagram of entry and room-panel operations, both the entry belt and the panel belt discharge into an Ingle-made transfer conveyor which

carries the combined stream of coal through one entry breakthrough to the mine-car loading point.

The advantages are (1) the elimination of individual loading points with consequent savings in labor and (2) utmost simplification of the track-haulage system. The haulage operation is a shuttle-type sequence



**TRANSFER CONVEYOR** moves coal through entry crosscut to mine cars. Loop for placing empties smooths haulage.



**SUPPLY UNDERPASS** facilitates moving materials to room panel. M. H. Dedman (left) Ditney Hill, is mining engineer.



SHUTTLE CARS from one room unit feed to end of belt. Cars from outby unit discharge to a side-dump station.

## at Ditney Hill

consisting of moving loads from the loading point to the dump hopper at the foot of the slope and feeding empty cars through a loop track to the loading point serving the particular working area.

Trips of loads (from 14 to 16 5-ton cars) are moved by an 8-ton locomotive at the head end as prime

mover and a 6-ton locomotive at the rear to provide added tractive and breaking effort as need on grades. The 6-ton locomotive leaves the trip at the bottom and returns alone with the next trip of empty cars. The 8-ton unit hauls the bottom-dump cars across the dump hopper at the foot of the slope.

### Mining Methods

The Ditney Hill workings are in the Indiana No. 6 seam, although seams correlation is somewhat obscure in this area, Warrick County. Mining height is from 6½ to 7 ft, leaving up to 1 ft of top coal to support a weak shale roof.

The mine was opened in 1939 and has been worked since that time in a system which employs conventional equipment to recover room panels, as shown. The panels are sealed when recovery is completed. At the outset entries were driven 10 ft wide on 35-ft centers, and rooms 24 ft wide on 36-ft centers. A few years ago center distances were increased to 40 ft between entries and 45 ft between rooms to improve roof conditions.

Present development methods consist of driving 8-heading main entries to open up areas for room panels. In the latest scheme room panels are opened by driving two headings at right angles to the mains and picking up a third heading beyond the barrier which protects the mains. The use of only two headings through the barrier pillar makes it easier to seal the sections when they are worked out.

Normal dimensions of a room panel are 800x800 ft, with the panel entry splitting this block. Rooms are worked

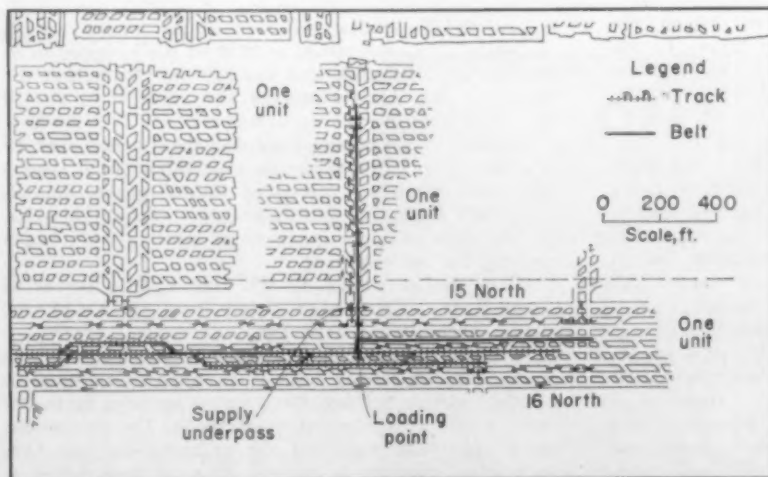


DIAGRAM OF PRESENT SYSTEM shows how three units contribute to one loading point and how doors and checks are eliminated from shuttle-car roads.





ALVA S. HARRIS, general manager (to right of speaker's stand, left photo) gets annual barbecue underway. David Ingle Jr., president, addresses gathering, and David Ingle Sr. and W. D. Ingle Sr., founders of the company, are at right background. At right are Ingle's miners and families moving through refreshment line on the anniversary of the 8-hr day agreement.



GOOD FELLOWSHIP reigns as present employees and their families, retired miners and guests eat and visit.

GUESTS include Ralph Day (left), UMWA; Harry Gandy Jr., National Coal Association; F. J. Smith, C. M. Dovidias and H. F. Weaver, U. S. Bureau of Mines; Louis Austin, UMWA; C. A. Purcell, Indiana Bureau of Mines; James O'Connor, USBM. Alva S. Harris (right), general manager, Ingle Coal Corp., is grand marshal of the outing.

## Ingle Coal Corp. Hosts Company Barbecue at Ditney Hill Mine

THE ANNUAL Ingle Barbecue was in session, the 19th revival of the affair, with all employees of the company, their families and guests of the company joining the festivities when the scenes in this panel were recorded by a *Coal Age* camera last April 1.

The company, in a nice gesture, is host to this party on one of the more important contract holidays in the union's calendar, the anniversary of the wage agreement that decreed the 8-hr day in coal mining. All employees and their families, including those who have retired from service with Ingle Coal Corp., are invited.

The traditional menu consists of beef barbecue sandwiches, a relish of onion rings and pickles, etc., and drinks—soda pop for those who prefer it and a couple of barrels of beer. There is plenty of everything.

The short, informal program consists of greetings to the group from Alva S. Harris, general manager of the company. At this year's affair Mr. Harris introduced David Ingle Jr., president, who also extended greetings, and David Ingle Sr. and W. D. Ingle Sr., founders of the company. Mr. Harris also introduced the retired

miners in attendance, and told of the annual party's inception as a celebration in 1939 of the completion of the Ditney Hill slope and the railroad track into the property. Mr. Harris started the affair then and it has been held every year since.

Conduct of the proceedings was then turned over by Mr. Harris to Ralph Whitman, superintendent at Ditney Hill. Mr. Whitman introduced invited guests, including UMWA officials and federal and state dignitaries. At the close of these proceedings local caterers began serving the refreshments.

Under the direction of Mr. Harris, who serves as marshal, the affair begins promptly at 11:30 AM, and closes promptly at 2:30 PM.

In addition to the April Barbecue, the company also distributes Christmas baskets to all employees prior to the Yuletide holiday. Each basket includes turkey or ham, a box of candy and other foods. The two events each year have solidified the organization, and have helped to promote a general tone of smoothness in the relationships between mineworkers and management.



**TWIN-BOOMED** unit drills holes for air breaking. Bit is equipped with roof-bit insert to break out core.

22 to 24 ft wide right and left of the panel entry to a depth of 350 ft, measured from the center line of the center heading. The panel belt is installed in this center heading.

Rooms are worked in sets of nine, with the center room serving as a key room and as a main route to the shuttle-car discharge point. When a mechanical unit is working a set of rooms a second loading machine usually is added. Then each loader operates in a set of four rooms and the center or key room is advanced by the machine that can most conveniently load out the prepared cut of coal. This key room, available to either of the two loaders, introduces maximum flexibility into the system to keep both loaders busy.

### Mining Equipment

Unit equipment consists of 11-BU loading machines, 10-RU cutting machines, CD-25 coal drills, 42 E-shuttle cars, all Joy machines, and Airdox coal-breaking equipment. A unit crew consists of 12 or 13 men, depending upon whether one or two loading machines are used, as follows: loader operators, two men on the cutting machine, two on the coal drill, one shooter, two shuttle-car operators, two utility men, one mechanic and a supervisor.

The first set of rooms to be worked is the outby set on the return side of the panel. When the second mechanical unit enters the panel, it begins to work the inby set on the



**SLURRY-TYPE ROCKDUSTER** is mounted on cutting machines. In a matter of minutes a batch of slurry can be mixed and distributed. Water for mixing is from dust-allaying system and discharge pump is hydraulically driven by cutter.

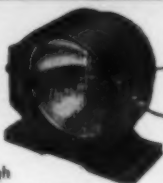


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pletely automatic, the proper circuit is always connected to the power source, whether cable or trolley. Cover is dirt and drip-proof.

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REUSABLE STOPPINGS are extensively employed in Ditney Hill's ventilation circuits. Overcasts are made of large-diameter corrugated culvert sections.

intake side of the panel. The result is that both mechanical units work in good air. Rooms are necked during development to a depth sufficient to clear the cutting machine. These room necks provide extra working places for the development crew.

The shuttle cars of the unit working the inby rooms discharge onto the end of the panel belt. Cars of the unit in the outby rooms discharge onto the side of the belt over a specially - designed steel receiver which trains the load on the belt. A free-swinging probe hangs over the belt to signal the operator of a car approaching the side dump that the belt already is loaded with coal from the inby unit. The swinging probe is equipped with a mercury switch which lights a signal lamp when the probe is tilted by coal on the belt. The arrangement is shown in one of the accompanying illustrations.

### Panel Ventilation

One of the features of panel ventilation at Ditney Hill is the absence of doors or other air checks in the shuttle-car runways, as previously mentioned. Two of the three panel headings are intake airways. As shown in the diagram of the workings the intake air is diverted from the center heading into the outer heading by stoppings at the location of the shuttle-car discharge station. Beyond the station the air is returned to the center or belt heading. The stoppings across the belt heading are constructed of wood with brattice-cloth flaps over the

openings for the belt in the stoppings.

Extensive use of reusable metal stoppings helps to keep costs of such construction at a minimum. Material for these stoppings is furnished by Jack Kennedy Metal Products, Taylorville, Ill. Overcasts are made of corrugated Armco culvert sections, 48 in in diameter.

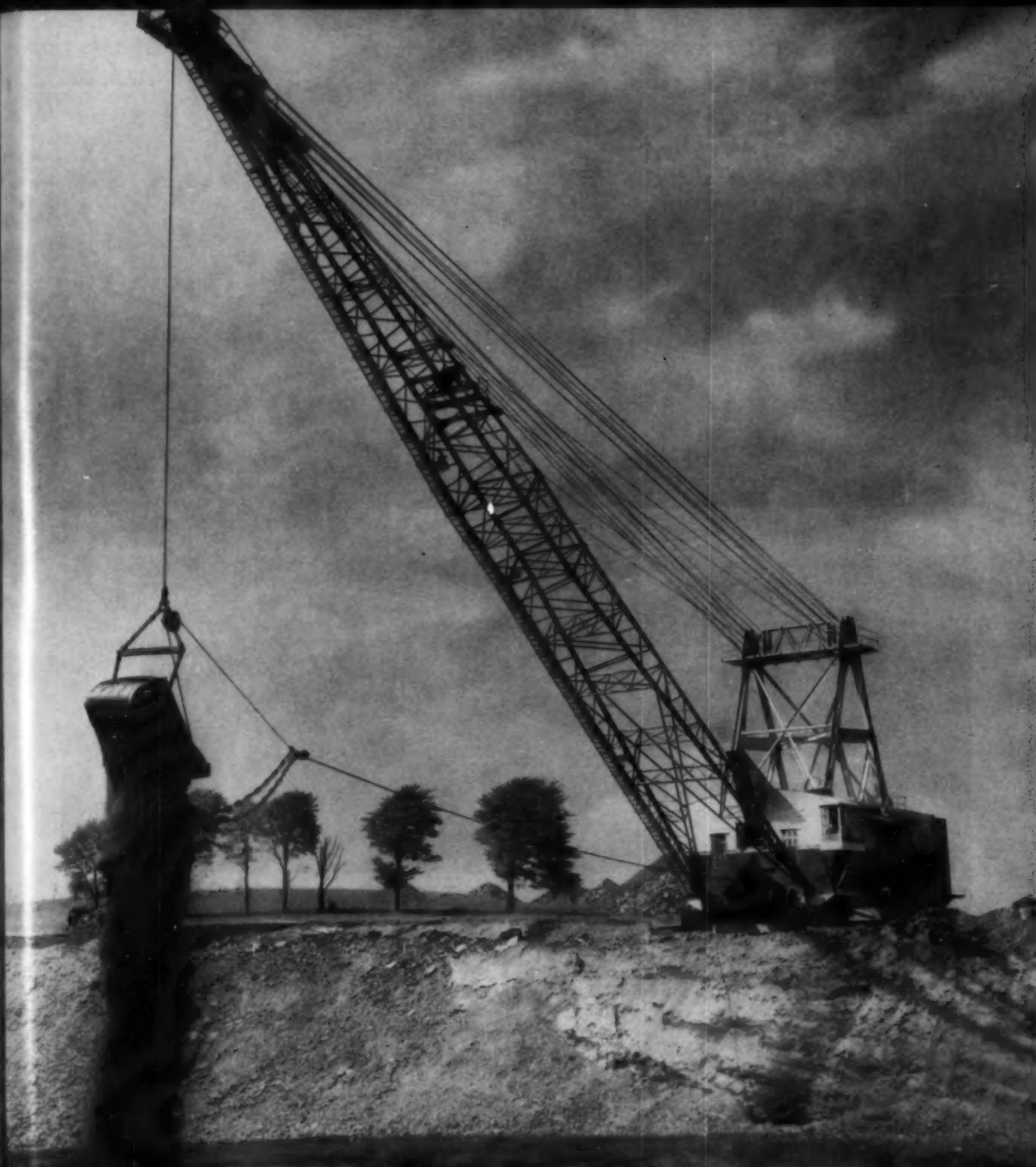
### In-Cycle Rockdusting

Rockdusting at Ditney Hill has been made part of the cutting cycle. Each cutting machine is equipped with a Mine Safety Appliances Co. Model 80 rockduster in which a batch of slurry is mixed as needed. The discharge pump of the Model 80 is driven by a hydraulic motor which is powered through a take-off in the hydraulic circuits of the 10-RU. In a matter of minutes the batch of slurry (one 80-lb bag of rockdust) is distributed on roof and ribs. Dry rockdust is distributed on the bottom.

One of the projects now being completed at Ditney Hill is the separation of track and belt headings in the main entry to place each of these transportation systems in a separate current of intake air. The erection of stoppings to effect this separation is nearing completion.

In another move to improve ventilation the company is driving a connection, through overcasts, to link the mains with an existing downcast airshaft. The result will be ventilation at reduced power and the conducting of intake air to producing sections without passing it by the seals of worked-out panels.





# A COAL FIELD FAVORITE

## MARION WALKING DRAGLINES

For 18 years, Marion Walking Draglines have been providing practical solutions for coal stripping problems. They do it in a very simple way . . . by giving the operator the plus features he needs to make himself and the machine look good on the job. These include the reach necessary to stack overburden high and far away; the capacity to move big yardage consistently; the ability to work and travel on soft footing without danger of bogging down. Marion

Walkers are available in sizes from 5 to 40 cubic yards and carrying boom lengths to 280 feet. Pictured is a Marion 7400 carrying a 13-yard bucket on 175 feet of boom in a Pennsylvania stripping operation. Write for Bulletins 426, 427, 428 and 429 describing the entire line of diesel-electric and full-electric powered Marion Walkers. The Marion Power Shovel Company, Marion, Ohio. A Division of Universal Marion Corporation.



**PRODUCTION AT BOWIE** involves dragline for rock, 2½-yd shovel loading the 15-ton trucks that carry coal 1 mi to the loading and storage area. Not shown here is the bulldozer used to cut down and dispose of the loose top material.



**INITIAL CUT** is made by dozer with hydraulic tilt blade. Machine removes material to within 4 ft of solid sandstone.



**DIESEL-POWERED DRAGLINE**, swinging a 6-yd bucket, cuts 60- to 70-foot swath through lower portion of overburden.

## Profitable Thin-Coal Stripping With Bulldozer and Dragline

Up to 60 ft of overburden handled by bulldozer and dragline to recover 3-ft seam at Bowie strippings. Contract drilling and ammonium nitrate feature blasting work, and stockpiling of R-O-M and 2x0 are part of the preparation schedule.

**CLOSE SUPERVISION** of blasting practices to minimize rock-breaking costs and maximum productivity from stripping units leads to profitable recovery of 36-in coal by the Bowie

Coal Co., mining at Clintonville, Pa.

Bowie Coal relies on a combination of a big bulldozer with hydraulic tilt blade and a 6-cu yd dragline to remove as much as 60 ft of over-

burden from the Pennsylvania hills to expose the Middle Kittanning seam. Overburden, beginning at the top of the coal, consists of 0 to 15 ft of shale, 5 to 40 ft of sandstone and a variable thickness of loose sandstone and soil.

### Bulldozer Stripping

A Caterpillar D9 bulldozer with a hydraulic-tilt U blade takes an initial cut of loose material down to within a few feet of the sandstone. Working



**STOCKPILING AREA** has crushing facilities for reducing R-O-M to 2x0. Both are stockpiled. Original method (left) involved trucks. Now (right) piling is handled by belts. View also shows John G. Snyder, partner and office manager.

at right angles to the outcrop, the bulldozer cuts down the loose sandstone and soil and pushes it into the previous cut. The bulldozer operator first locates the top of the sandstone and then leaves 4 to 6 ft of the loose material in subsequent stripping. Bowie management reports that leaving several feet of the loose material contributes to better blasting results.

Once each week a drilling contractor brings in a truck-mounted Davey vertical rotary overburden drill and sinks 6½-in holes at the corners of 15-ft squares. The first row of holes parallel to the highwall is located 25 ft from the edge of the rock highwall and at the top of the slope made by the dozer cut. Holes are drilled only to the top of the shale covering the coal. By leaving a protective layer of solid rock the company prevents shattering of the coal and possible loss in stripping.

While the overburden drill punctures the rock with holes, two or three Bowie employees distribute 80-lb bags of fertilizer-grade ammonium nitrate to the drill holes. One gallon of fuel oil is poured into each bag of nitrate and left to percolate through it as additional bags are distributed. Loading begins as soon as nitrate is distributed to all holes.

Each hole is charged with 40 to 200 lb of ammonium nitrate-oil mixture, depending on the depth of the hole. Shallow holes are primed with a minimum of 1½ lb of Atlas 75% gelatin. Deeper holes are primed with two 1½-lb primers.



**KEY MEN** are L. L. Bowie (left), preparation foreman; R. R. Bowie, president; H. M. McCoy, superintendent; and Ralph Toy, drilling contractor.

A small quantity of the nitrate-oil mixture is poured into the bottom of each hole, then the primer with an electric cap is lowered into place. If two primers are needed, they are connected with a 20-ft section of detonating fuse. One of the primers is connected to a blasting cap and the other to the leg wires. Then both primers are lowered into the hole into which a small quantity of blasting agent has been poured. The charging crew then adds the required volume of nitrate-oil mixture and stems the hole to the top with drill cuttings.

To secure the maximum benefit from the blasting agent, Bowie relies on delay blasting with Atlas Nos. 0, 2, 4 and 6 caps. A group of 80 to 100 holes is drilled, loaded and fired on the day the drilling contractor comes to the property.

In the few instances where the company encounters water in the holes special prepacked denser ammonium nitrate-oil mixture is used. The prepacked product not only is water resistant but also is heavier than water and consequently sinks to the bottom of the hole.

### Dragline Stripping

A Manitowoc 4500 diesel-powered dragline, swinging a 6-yd bucket from its 120-ft boom, moves onto the shot overburden and exposes a 60- to 70- ft strip of coal. Working two shifts per day six days a week, the dragline uncovers an average of 14,000 tons of coal per month.

The company keeps two dragline buckets on hand so that the one in use may be exchanged for a rebuilt





## EXIDE-IRONCLAD BATTERIES

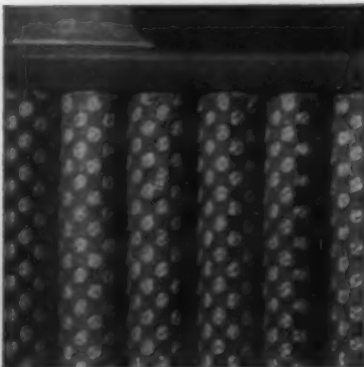
*—best buy for the long haul*

More ton-miles per dollar—that's the reason most cost-conscious mine operators prefer Exide-Ironclad Batteries for mine locomotives.

Experience has proved over the years that no other battery make matches Exide-Ironclad for average life in service and tonnage hauled. Rating for rating and dollar for dollar, Exide-Ironclad gives you more real value . . . more return on your investment.

Today's Exide-Ironclad features improved tubular construction, making it even better than the models that chalked up the industry's records. So you can expect even longer life potential and superior performance.

Total work output, not mere price, is the key to battery economy. When you buy batteries, specify Exide-Ironclad and get the most production capacity your dollar can buy. For details, write Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 20, Pa.



50 years ago, Exide patented the now-famous Exide-Ironclad tubular positive plate battery. For power and economy, nothing has ever matched it. Yet Exide engineers have constantly improved it. Today's battery packs more power, gives longer life and greater economy than ever before.

# Exide®

unit as soon as it shows signs of weakness. Management says that buckets last longer when they are changed regularly and before major wear takes place. A bucket lasts an average of 2 yr in the abrasive sandstone.

Not only does careful attention to bucket repair and regular changeout extend bucket life, according to company officials, but keeping sharp teeth on the bucket enables the unit to dig easier.

Bowie's dragline is 6 yr old but to all outward appearances it is new, and company supervisors say that only insignificant production delays have been experienced in that time. Careful daily inspections, preventive maintenance practices and operating crews that take personal pride in caring for and operating the dragline are some of the reasons pointed out by the company why failures are kept to minimum. Past operating experience plus careful inspection enable the company to replace parts before a breakdown occurs. Hence productive time is at a maximum.

### Loading and Hauling

After the dragline exposes the seam, a Michigan 75 highlift removes any fine dirt remaining on the coal. Then a Manitowoc 3250 diesel-powered 2½-yd shovel loads coal into three 15-ton International trucks which carry it 1 mi to the loading and storage area.

Trucks discharge into a 50-ton bin which feeds a Jeffrey crusher making a 2x0 product. The crushed product flows to a swivel chute that discharges to waiting trucks which carry the coal either directly to the consumer or to a railroad tipple located several miles away.

Company trucks also are used to build up stockpiles of R-O-M and 2x0 coal during the summer months. In the near future the company expects to add a stockpiling belt to carry coal from the truck-loading chute to the stockpiles, thus eliminating the need for trucking to the storage areas. The company also has under construction a new tipple on the Bessemer R. R. at Annadale.

A Hough Payloader with a 1-yd bucket and Link-Belt 1-yd diesel-powered shovel transfer coal from the stockpiles to trucks, which then travel either directly to the customer or to the tipple.



## **"NO 'COFFEE BREAKS' FOR THAT BABY...."**

When KW-Dart trucks are on the job, they stay on the job. Down time is reduced to a minimum because each KW-Dart and each component is engineered for its specific job requirement.

KW-Dart has been building "tonnage-engineered" trucks since 1903. Performance figures, proving their rugged durability, are available for your study.

To reduce your maintenance costs and keep your trucks on the job, call for a KW-Dart engineer to consult with you.



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Engineered for extremely adverse conditions.

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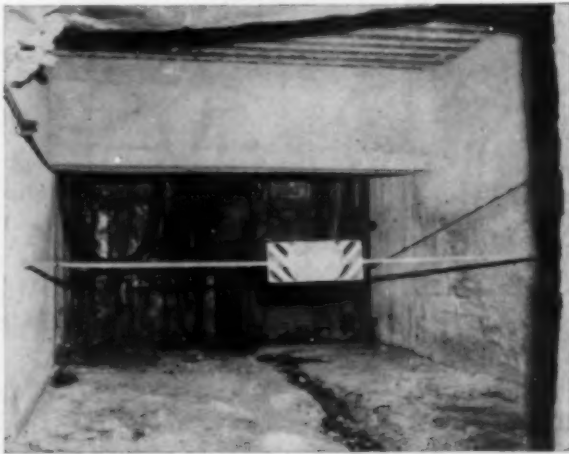
**NEW PORTAL FACILITIES** at Barnes & Tucker's Lancashire No. 15 mine include wash rooms, pushbutton elevator, fan and supervisors' offices.



**ENCLOSED PASSAGEWAY** to top of elevator shaft protects miners.



**AIR INTAKE** is at coal level and under manway ramp for added employee comfort. New fan moves 140,000 cfm of air.



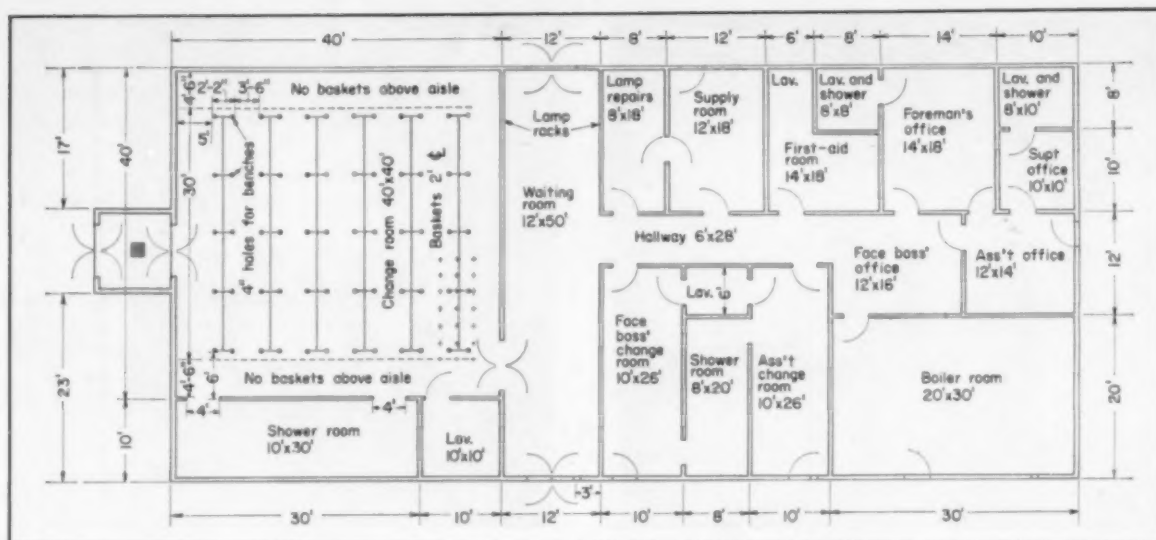
**ELEVATOR LANDING** is 18 ft above coal level to keep men out of main air intake. Ramp leads to mantrip waiting station.



**CHANGE ROOM** and shower facilities now serve 265 miners, can handle more. Note corrugated aluminum ceiling.







**BUILDING PLAN** includes change rooms and showers for supervisors and miners, combined lamproom and waiting room, first-aid and supply rooms, and supervisors' offices. Installation is at top of new 540-ft-deep shaft equipped with elevator.

## New Portal... Higher TPM, Better Ventilation

A 20% INCREASE in output per manshift, improved ventilation and a 3½-mi decrease in travel distance are major gains resulting from new portal facilities at Barnes & Tucker's Lanchashire No. 15 mine, Barnesboro, Pa.

The new facilities serving No. 15 include an 11x22-ft two-compartment shaft, 8-ft Jeffrey Aerodyne fan, Otis 17-passenger pushbutton elevator and a fireproof multipurpose surface building. Housed under one roof in the 50x110-ft building are a large washroom for the miners; assistant and face foremen's dressing rooms; offices for superintendent, mine foremen and electrician; first-aid room; supply room for small fast-moving items; combination lamp-charging and waiting room; and boiler room.

A completely enclosed passageway connects the waiting room with the top of the elevator compartment so that the miners are not exposed to

the elements while entering or leaving the mine. All building walls are concrete block and the roof truss and supports are steel. The roof itself is asbestos with 2 in. of fiberglass insulation between it and the corrugated aluminum ceilings. A ventilation ridge runs the full length of the roof's peak and two 13,000-cfm fans provide fresh air.

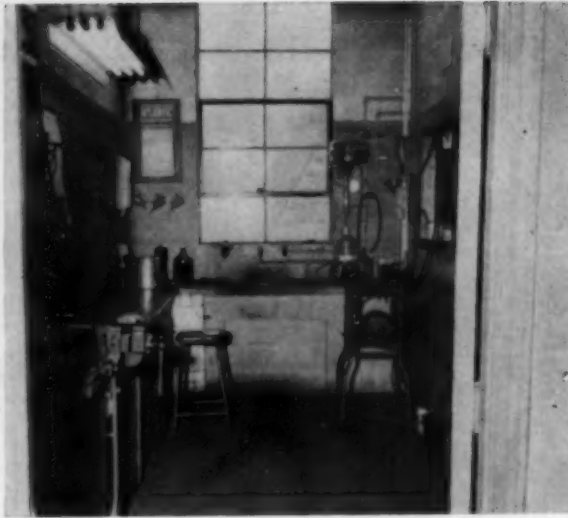
A zone-heating system with individual thermostats for five hot-water circulators keeps each of the areas of the building, plus a house and store, at the desired temperature in cold weather. For example, the shower and change rooms are kept near 90 deg and the supervisors' offices in the 70s. Another circuit heats the nearby commissary and



**COMBINED LAMPROOM** and waiting room is located at entrance to passageway leading to top of elevator shaft. This passageway protects men from the elements.



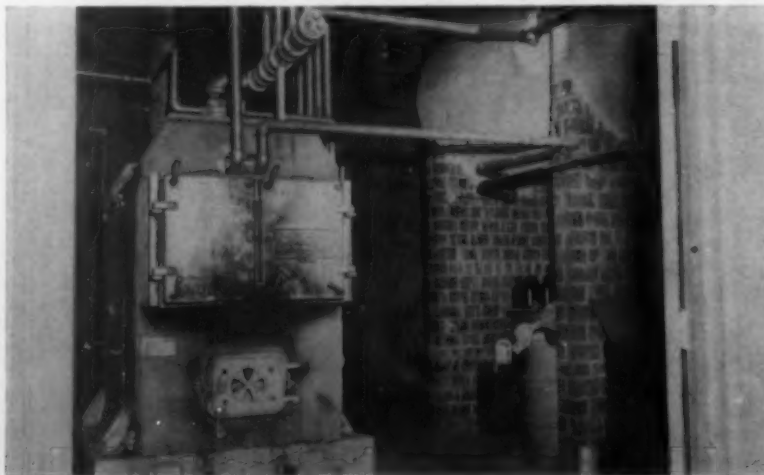
**ELEVATOR**, operated by pushbutton, carries 17 passengers down 540-ft shaft in 1 min 10 sec. Elevator travels 526 ft.



**SEPARATE ROOM** is provided for repairing and servicing miner's lamps at new portal serving Lancashire No. 15 mine.



**SUPERINTENDENT'S OFFICE** is large enough to serve as supervisor's meeting room. Mine foremen and electrician also have offices.



**HEATING SYSTEM** includes separate thermostatically controlled hot water circulators for five different areas.

portal attendant's house, and the fifth zone includes the supply and first-aid rooms.

### Shaft Construction

Barnes & Tucker's new 540-ft shaft has a 14-in concrete lining with  $\frac{3}{4}$ -in reinforcing rods running through it on 18-in centers vertically and horizontally. Its 22-in coping extends 22 ft down from the top. A double-brick wall separates the shaft into two compartments.

Panning was used in about 40% of the shaft, with water from the panning directed to either of two water rings or in some instances to a drain-hole alongside the shaft.

At the 140-ft level the company has a source of 22 gpm of pure water. This inflow is diverted to a 22,000-gal reservoir cut into the rock surrounding the shaft. An Aurora pump mounted on a concrete pedestal in the reservoir delivers water through a 2-in pipe to a pressure tank in the boiler room. The water comes from a limestone formation, has a pH of 7.3 and is free of bacteria. Thus the company needs no water-treating facilities, but takes periodic samples for analysis to check on the water's quality.

The company made a significant saving in construction cost by fabricating the headframe from material salvaged from an old preparation plant. After the entire structure was fabricated and welded into one piece in the company's shop a crane hoisted

fit into position over the shaft. It then was sheathed with corrugated aluminum.

To keep intake air off the men as well as keep freezing at the landing to a minimum the company built the elevator landing 18 ft above the coal level. Then, by splitting a pillar and ramping up to the elevator landing, a sheltered connection was provided between the waiting station on the coal level and the elevator in the new manshaft.

To take full advantage of the new elevator and prevent congestion at the beginning and end of the shift, starting times for various section crews are staggered 15 min apart. Barnes & Tucker has three major working areas and a total of 11 producing sections in these areas. A total of 265 men use the portal on two full shifts and a partial third shift. The elevator makes the 526-ft down trip in 1 min 10 sec and returns to the surface in 1 min 2 sec. Barnes & Tucker began using the shaft in May, 1957, and expects to continue using it as the main portal for several years.

#### Other Improvements

The shaft and surface facilities are but one phase of Barnes & Tucker's continuing program to improve mine facilities or methods. For example, the company has increased the width of belts in butt headings to 36 in, and automatic car spotters are under consideration for the near future along with new higher-capacity shuttle cars.

Another recent improvement that helps boost over-all efficiency is a more powerful underground hoist that handles cars on grades averaging  $3\frac{1}{2}\%$  against the loads, with maximums up to 19%. Because of this irregular seam condition Barnes & Tucker relies on rope haulage on the main line.

The larger hoist handles 28 8-ton cars per trip over 14,000 ft of track in 9 min less than the old hoist could pull 22 cars. As a result two more longer trips are made per hour. Equipped with a resistance-type controller, the hoist has fully automatic step starting and operation. The rope travels 17.3 mph. As a precautionary measure in event of a rope failure the company employs a special device that would spread the rails as soon as a break occurred. A 25-ton locomotive tails each trip to the surface and pulls the rope back to the sidetrack.



Patents Pending

## Are You Taking Advantage of these TWIN DECK ECONOMIES?

1. Twice as much washed coal in the same unit of floor space.
2. Greatly reduced power consumption per ton of cleaned coal.
3. Lighter new housing construction made possible by floating suspension that reduces impact to the building.

You get all these advantages—and more—with the CONCENCO® "77" twin deck table.

For full information, send for Bulletin 77.



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##### Feed Distributor

While unexcelled for feeding coal washing tables, the CONCENCO Feed Distributor effectively provides an accurate splitting of feed into any desired number and proportion of parts to feed circuits or machines in battery for their greater overall efficiency. It is a heavily fabricated all steel machine with motor drive requiring 1 h.p. or less in operation.

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PRODUCTS

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*...have you considered this revolutionary machine for*

Take a close look at the unique abilities of the Bucyrus-Erie wheel excavator. Perhaps it is the answer to your large-scale excavating, stripping and high-volume dirt-moving problems.

In the coal fields for example, Bucyrus-Erie wheel excavators team up with present big shovels and make it possible to uncover veins previously too deep for practical stripping...

thereby increasing strippable reserves and extending the use of present equipment.

The "wheel" can deposit the unstable material, normally occurring near the top of a mine cut bank, far back onto the spoil pile. The stripping shovel places the more stable material from the lower part of the bank at the bottom of the spoil pile where it acts

as a "b" against

Prod  
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consult  
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## e for your operations?

es  
at  
as a "buck wall," providing protection against slides in the pit.

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Production can be adjusted to suit your requirements and the cost per cubic yard of material dug is lower than by any other method.

For details on how a wheel excavator may be applied to your operations consult Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept 5LE.

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**Bulds Better Equipment**

# Foremen's Forum

## Mouth-To-Mouth Resuscitation



1. Mother, using middle finger of one hand, clears child's mouth of any foreign matter. With same finger she holds his tongue forward.



2. Mother places child in face-down, head-down position, and pats him firmly on the back with her free hand to help dislodge any foreign object in the air passage.



3. The child is placed on his back, and mother, using middle fingers of both hands, lifts the lower jaw from beneath and behind so that it "juts out."



4. With one hand only, the jaw is held in this jutting-out position.



5. Mother, covering child's mouth and nose with her mouth, breathes into the child with a smooth, steady action. The free hand applies continuous moderate pressure to the child's abdomen, between navel and ribs, to prevent the stomach from being filled with air.

Here is a description of a method of artificial respiration that someday may enable you to save the life of a coworker or a member of your family. Please show this page to your wife and the older children at home.

"AND HE WENT UP, and lay upon the child, and put his mouth upon his mouth, and his eyes upon his eyes, and his hands upon his hands; and he stretched himself upon the child; and the flesh of the child waxed warm."

"Then he returned, and walked to the house to and fro; and went up and stretched himself upon him: and the child sneezed seven times, and the child opened his eyes."

—II Kings 4: 34-35

These verses from the Bible tell how the prophet Elisha revived a young child, apparently using the methods of mouth-to-mouth artificial respiration. Recently, the American Red Cross officially adopted the mouth-to-mouth method for restoring

breathing for use with adults as well as with children. About 2 yr ago the Red Cross adopted the method for reviving children. Beginning now, the mouth-to-mouth method will be taught in all Red Cross first aid and water safety courses, along with the arm-lift methods now employed.

This method of restoring breathing should be particularly applicable where additional injuries may make the use of prone-pressure methods undesirable. Here are instructions for performing this type of resuscitation issued by the Red Cross:

Immediately upon discovery of the unconscious person remove any visible foreign material from his mouth. Wipe it out quickly with the fingers or with

a cloth wrapped around the fingers. Then:

1. Tilt his head back so his chin is pointing upward. Pull or push the jaw into a jutting-out position. These maneuvers should relieve obstruction of the airway by moving the base of the tongue away from the back of the throat.

2. Open your mouth wide and place it tightly over the victim's mouth. At the same time pinch the victim's nostrils shut or close the nostrils with your cheek, or close the victim's mouth and place your mouth over his nose. Blow into the victim's mouth or nose. Air may be blown through the victim's teeth, even though they may be clenched. The first blowing efforts should determine whether or not obstruction exists.

3. Remove your mouth, turn your head to the side, and listen for the return rush of air that indicates air exchange. Repeat the blowing effort.

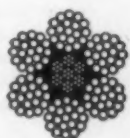
There are two major differences in procedure between administering mouth-to-mouth resuscitation to a child and to an adult. One applies to the breathing itself. For a child, take relatively shallow breaths appropriate to the child's size at



**YOU CAN'T  
BARGAIN  
WITH SAFETY**

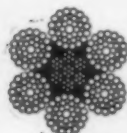


**WICKWIRE ROPES  
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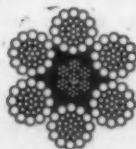
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Filler Wire, IWRC**

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*For detailed recommendations,  
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*"job-designed" wire ropes*

The Image of CF&I—a giant steelman—stands for the rigid quality-controls and testing procedures that are carried out in the production of Wickwire Rope. This Image also reflects CF&I's ability to design a specific product to meet a particular need.

These are the very reasons why CF&I-Wickwire Ropes are both *safe*—as only a *quality* wire rope can be—and *suitable*—because they are available in a *complete range* of wire grades, types, sizes and constructions, designed to meet each industry's requirements.

Avoid the losses—due to injuries and wrecked equipment—that can occur when a "bargain" rope fails. Buy a quality wire rope that's designed for the job it must do—a CF&I-Wickwire Rope.

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6794-B

## Foremen's Forum (Continued)

the rate of about 20 a minute. For an adult, blow vigorously at the rate of about 12 breaths a minute.

The other difference relates to initial failure to get air exchange. If this occurs, recheck head and jaw positions of the victim. In the case of a child, up-end him by holding the ankles and administer two or three sharp slaps between the shoulder blades. An adult, who cannot be lifted easily, can be turned on

his side so that the blows on the back can be given to dislodge obstructing matter.

Rescuers who do not wish to come in contact with the victim may hold a cloth over the latter's mouth or nose and breathe through that. The cloth will not greatly affect the exchange of air. A "by-the-numbers" description of the procedure for a child victim is shown in the accompanying illustration.

## Can Your Son or Daughter Get Into College?

MORE than the Old Man's ability to pay the bills is required to get into college today. The scholastic ability of the student, as demonstrated in high school, is the primary basis upon which acceptance or rejection is decided. Furthermore, the colleges are now making these decisions. Most of the top-level schools have more applicants than they can accommodate, so they are becoming increasingly selective—which is as it should be.

What do admissions officers look for in a prospective student? Why are some applicants turned away? What can you do, assuming your youngster really wants to go to college, to remove some of the roadblocks?

In reply to the first question, they look first at the applicant's rank in his high school class. They look long and hard at those in the upper third and will not summarily turn away those in the upper half. Then they examine the subject matter covered in high school. A good high school record in mathematics, science and English still is taken as an indicator that a young person can handle college-level work. Deans of admission do not like to accept students and then see them drop out. They too, take pride in their batting averages.

Aside from scholastic ability, the colleges would like to have young people who are personable and able to maintain proper relationships with others. They don't mind at all if the student is an athlete. The emphasis is on scholarship, but most colleges like to have students who combine this quality with either or both of the others.

What are the reasons for rejection? According to an article in *General Electric Review*, 61.5% of the rejections are because of low high school grades, 25.5% because of lack of specific subject matter in high school and only 13% for

lack of ability. Of the group who are denied admission because of lack of specific subject matter, approximately 75% have a relatively poor background in mathematics and the others lack sufficient preparation in physics, chemistry and English. The deficiency in English includes the lack of ability to read with ease and proficiency.

It is disheartening, says the *General Electric Review*, that most of the applicants who are rejected for low grades in high school could have placed in the upper levels of their high school classes had they taken their work more seriously.

Deans of admission are not being arbitrary in this matter of selection. They are forced to be more strict in their evaluation because of the throngs of applicants knocking at their doors. The reputations of the colleges they serve are made by the students as they take their places in the world, so they strive to get the best through careful selection.

What can you do? Take an interest in your particular young person's curriculum and performance in high school. If he is entering high school you have an opportunity to give him thoughtful guidance all the way through. His future usefulness and happiness depend to a great degree on how well you do this job. If he is further along in school and if you have not met the principal, you better do just that. Discuss the matter of your youngster's curriculum and performance with him. The happy result may be that you will head off and prevent later difficulties. The principal would love you for coming to him with a problem like this.

Take enough interest in what is going on at the schoolhouse to know what is expected of your young student in the matter of homework and home study. Help him at home, when you can. His interest in school will be deepened and his performance will naturally improve.

If you think your young man or woman can do college work and merits a college education, but money is a problem, do not be dismayed. There are numerous financial assists available—more now than ever. Your school superintendent or principal will be able to advise you in these matters. Do not overlook the possibility of getting your boy an appointment to a service academy, or at least helping him get the opportunity to take a competitive test for acceptance.

If your teen-ager is pretty well set on what he wants to be, write to the college of his choice—to the Dean of Admissions—and ask for a general catalog. It will tell you of the requirements for entrance, the requirements for graduation, approximate costs and the availability of scholarships. It is never too early to do this, once the young mind has been made up.

## The Other Shift

I want to tell you boss, I've mined  
For twenty years or more;  
In all this time I've never seen  
A mess like this before.

Just take a look at that air line,  
It's broken plumb in half.  
You see, the other shift walks out  
And then we stand the gaff.

They didn't cover up the hose,  
We can't find all the tools.  
No one can get away with this!  
I guess they think we're fools.

How anyone in eight short hours  
Could get so little done!  
They really tore the place apart  
And never got a ton.

Unless they teach these farmers how  
To timber and to drill  
I'll turn my pick and shovel in  
And go on down the hill.

About the other shift that worked—  
What's that? You're sure you're  
right?  
The Hell you say, how could that  
be?  
There was no shift last night?

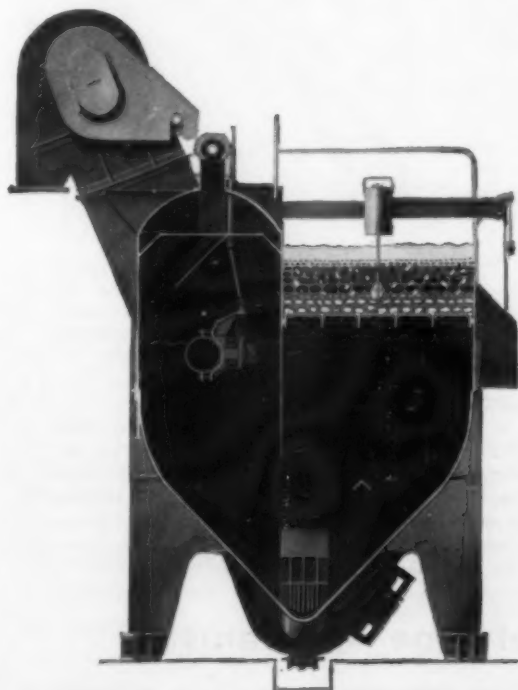
From *Sharp Bits*, Homestake Mining Co., Lead, S. D.

# "Profit-squeeze puts new emphasis on efficiency"

Efficient, dependable Jeffrey equipment is a valuable antidote for rising costs in coal preparation and utilization. It does important jobs better, faster... contributes to lower operating costs and lower maintenance costs.

Engineering firms assigned the responsibility for planning and constructing new industrial facilities select Jeffrey equipment as a means of easing the profit-squeeze. It pays to team up with a top-flight engineering company; they are familiar with Jeffrey products and their use.

For specific information regarding any of these products, get in touch with The Jeffrey Manufacturing Company, 912 North Fourth Street, Columbus 16, Ohio.

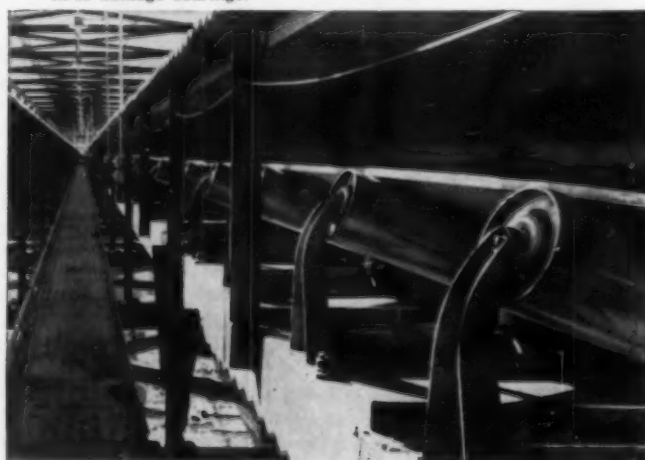


**Baum Jigs:** Provide a low-cost means of cleaning coal, separating fine and coarse sizes simultaneously, and recovering above 99.5% of the coal of a specified quality. Jeffrey air-operated jigs give exceptionally high capacity per unit of area, often ten times that of conventional plunger type jigs.



**Crushers:** Jeffrey offers a type and size for every sizing requirement. This is a 30" x 60" single roll crusher of the type specified for coal preparation plants.

**Perma-seal Idlers:** Give extra-long service on the toughest jobs with a minimum of maintenance. Double-diaphragm seals make certain grease can't get out to foul conveyor belts; dirt can't get in to damage bearings.



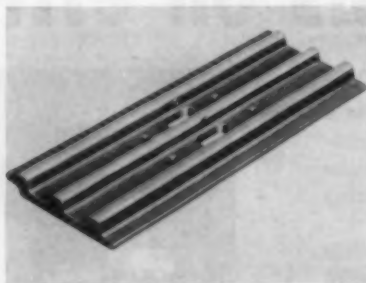
CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING



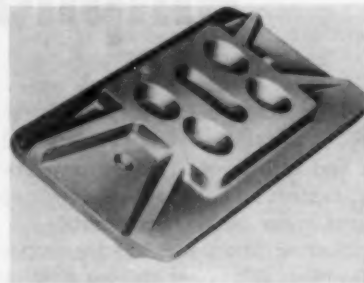
# Operating Ideas



**DOUBLE-GROUSER SHOE** is used on large tractors for operating in rock. It provides more contact area and greater resistance to bending and breakage than single high grousers. This type shoe also helps the tractor turn easier.



**TRIPLE-GROUSER SHOE** is used for multi-purpose conditions. It gives good traction in soft materials, but retains the advantages of the flat and flat-center shoe. It has high resistance to breaking or bending.



**GROUSER SHOE** is designed for operation in dirt or other granular materials. Widths narrower or wider than standard can be installed to get the degree of flotation or penetration desired on a particular job.

## How to Choose the Right Tractor Shoe

**MATCHING** the right size and type of track shoe to the job pays off in increased production and longer service life. C. G. Reider, Sales Development Div., Caterpillar Tractor Co., offers the following important information for owners of crawler tractors.

Ground conditions dictate the choice of track shoes. A cohesive soil like clay, for example, requires a grouser-type shoe which will provide flotation, traction and resistance to bending or breaking. When shoe width is increased, flotation and traction are improved. Wide track shoes, however, increase the wear on track components and the possibility of track shoe damage. A good rule to follow is use only the width necessary for good flotation.

In rocky conditions the recommendation for track shoes is in sharp contrast to those specified for work in soil. The prime consideration is for a shoe that will resist wear and breakage, since flotation is no problem. The type of shoe that will work best depends on the size

of tractor and the type of rock in which it is required to work.

When the tractor operates in broken rock a multi-grouser shoe should be used. These shoes have a higher resistance to wear than a single-grouser unit and still retain good traction characteristics. The multiple grousers effectively cross brace the shoes to make them less susceptible to bending and cracking under impact. When a tractor works exclusively on a smooth, hard surface a flat shoe should be used because of the wear resistance afforded by the large contact area. In either case, no wider shoe should be used than is needed for traction.

In applications where flotation is needed, but side clearance is a problem, offset shoes are used. Shoes may be offset either to the inside or outside of the track-chain centerline, depending on the need. Inside offset shoes are used on bulldozer-equipped tractors when flotation is required and clearance is necessary to keep the shoes from hitting the



**FLAT-CENTER SHOE** gives greater strength and penetration than the flat shoe. Designed for use in broken rock and similar materials, this shoe provides good traction in soft materials.

C-frame or push arms. Inside offset shoes are also used when pusher tractors require flotation and the shoes must remain inside the scraper cut. Outside offset shoes are used when extra flotation is needed and the tractor frame interferes with use of wider shoes.

## Safety Reminder—Never Oil Oxy-Acetylene Apparatus

**FOR SAFETY'S SAKE** never oil welding or cutting blowpipes, regulators or other oxyacetylene apparatus. These devices are designed to operate indefinitely without lubrication, according to Linde *Tips*. Thoughtless application of oil to these oxyacetylene apparatus may result in fire or explosion and ensuing personnel injury.

Not only should oil be kept off the apparatus but also every welding operator should be sure his hands and gloves are free of oil and grease. A greasy glove or hand applied to apparatus leaves a thin film of grease and could result in a fire if compressed oxygen comes in contact with it. Never load oxygen cylinders into grease-covered trucks. Here's why

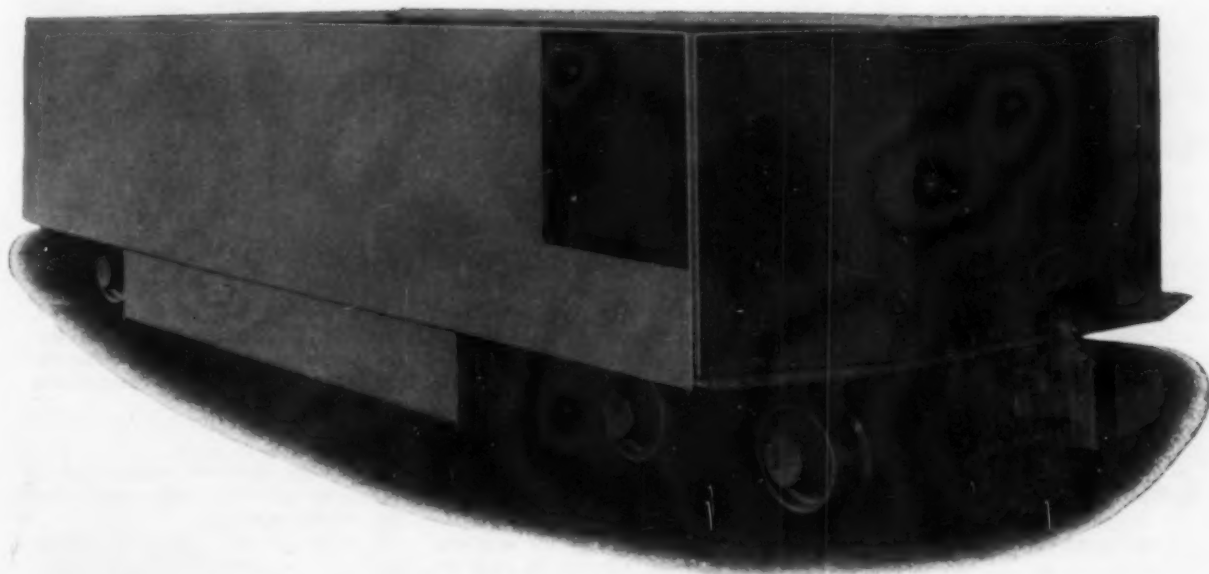
you should take these precautions around this equipment:

If oil comes in contact with oxygen under pressure, it may without any spark or any other ignition, suddenly burst into flame, causing an explosion. This happens because oxygen readily supports combustion and oil is highly combustible. The air we breathe contains slightly over 20% oxygen and we all know how easily oil burns in it; compressed pure oxygen causes oil to burn so rapidly that it explodes.

If you see a fellow worker starting to oil his apparatus or regulators, or handle oxygen cylinders and cylinder valves with greasy or oily hands, remind him of the disaster he is inviting.

# LOW

## but we didn't skimp on capacity



Bethlehem built this car for a customer with a problem. He needed a low car, and he didn't want it excessively long. Yet, at the same time, there had to be plenty of capacity. Bethlehem engineers worked up a design that filled the bill completely.

The finished car stands only 4 ft above the rails. Its inside length is 16 ft 6 in. Capacity (level), 390 cu ft; with 6-in. surcharge, 446 cu ft. Nominal load capacity, 11 tons.

Equipment includes automatic couplers, spring draft gear, forged-steel wheels, and fabricated trucks with roller bear-

ings. Body parts in contact with the lading are corrosion-resistant steel.

When you decide to expand your own fleets of cars, let Bethlehem quote you. We are set up to construct any welded or riveted model for end-dump or rotary-dump service. Details of design and engineering can always be worked out to meet your requirements.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

### BETHLEHEM STEEL



## Operating Ideas (Continued)



LONGER booms and dipper sticks and elevated cab for operator increase the efficiency of loading in two-seam operation.

### Peabody Engineers Redesign Shovels For Two-Seam Loading at River Queen

A LONGER BOOM and dipper stick and a "conning tower" for the operator have been added to a pair of Marion 4181 loading shovels at Peabody's River Queen mine, Greenville, Ky. These modifications were made to permit the loading of No. 11-seam coal into trucks which operate on the higher No. 12-seam haulage road. The two seams are separated by an 8-

ft-thick limestone formation at the River Queen property.

With the 50-ton Euclid haulers on the elevated road the problems of shovel-reach and operator-visibility cropped up during loading from the lower seam. Peabody's designers solved the problem by increasing the lengths of the booms from 38 ft to 50 ft and the dipper sticks

from 23 ft to 28 ft. The operator's cab was elevated to a position above the level of the house roof. The original 9-cu yd dipper was retained. As shown in the accompanying photos, the shovel now has the required reach and the operator is up where he can better see the dipper while it is being dumped into the hauler.

### Capacitor Location for Maximum Benefits

CAPACITORS give you maximum benefits when they are installed close to individual low-power-factor loads, points out G. R. Menkart, General Electric Co., in the August, 1959 issue of *Power*, a McGraw-Hill publication. However, load

terminals are not always the most-economical location. Alternate locations include utilization buses, points close to service entrances, or at the substation on either the primary or the secondary side of the transformer.

Two steps which will help you select the right capacitor locations and choose the right capacitor are:

1. Find the value of benefits which capacitors can produce at various locations. Table shows how you can expect location to affect capacitor benefits.

2. Compare the installed cost of capacitors at the various locations to the benefits they produce.

Capacitors can provide benefits in four different ways: (1) reduced power costs, (2) released system capacity, (3) improved voltage levels and (4) reduced system losses. Three general rules for guidance in location are:

1. Consider induction motors of 25 hp or more running continuously as capacitor locations.

2. Consider utilization buses as good location if automatic switching is not required; otherwise consider larger banks near service entrance.

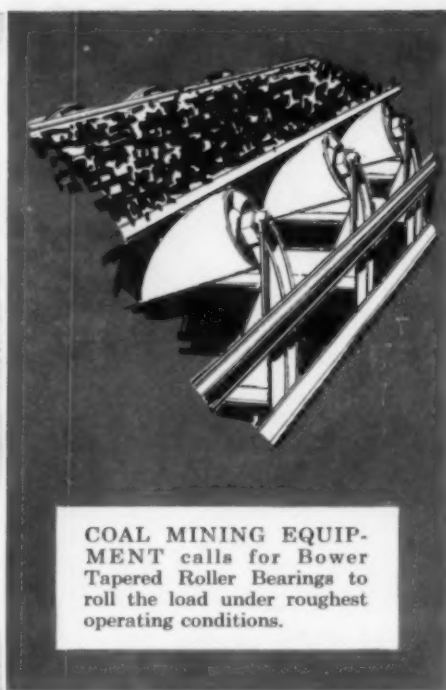
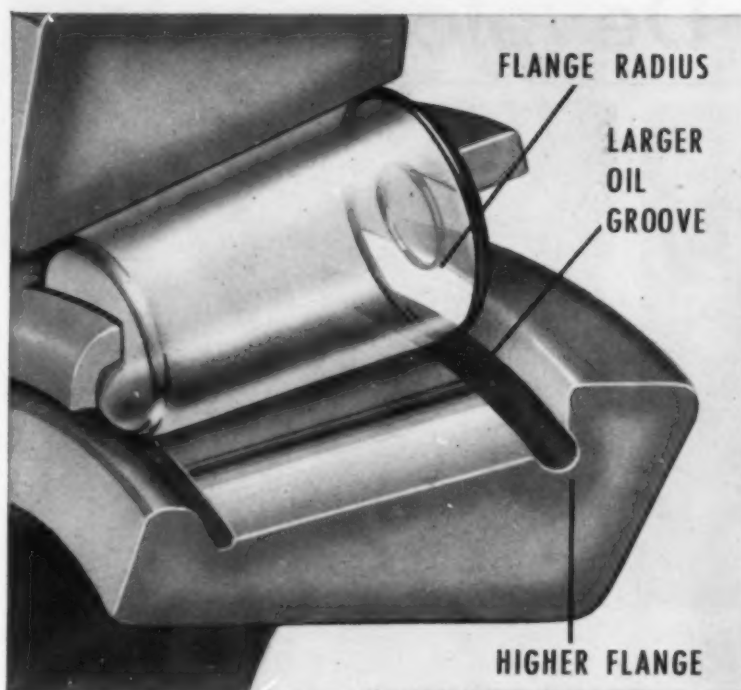
3. Consider primary units if power is purchased at 2,400 V or higher—and a reduction in the power bill is the only benefit.

Relative Expected Benefits From Capacitors on Different Parts of Typical Plant-Distribution System

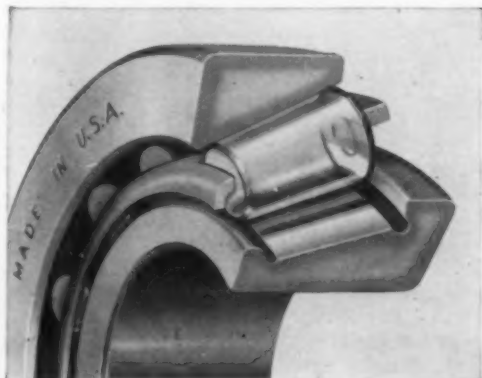
Capacitor Benefits	Primary Sub-station	Secondary Sub-station	Feeder	Utilization Bus	Load
Power-bill reduction . . . . .	0 or 100%	100%	100%	100%	100%
Reduction in KVA load on transformer . . . . .	0	100%	100%	100%	100%
Reduction in KVA load on feeders . . . . .	0	0	50%	100%	100%
Reduced power loss in plant . . . . .	0	15%	40%	80%	100%
Reduced voltage drop:					
1. Transformer . . . . .	0	100%	100%	100%	100%
2. Distribution circuits . . . . .	0	0	50%	90%	100%



Better products, *faster*, from your Bearing Specialist:



## Bower designs 3 "long-life" refinements into one small section of tapered roller bearings



Bower Tapered Roller Bearings are *Spher-O-Honed*: 1. Roller heads are spherically contour-ground, need no "run-in"; 2. Oil groove is bigger for positive roller-head lubrication; 3. Honing super-finishes inner and outer races for longer life.

Extra-high flange, larger oil groove and shoulder radius help reduce friction so bearings give high-tonnage service longer!

Bower's skill at the design board pays a bonus in service life when tapered roller bearings go to work in your machines. Take for example these *three* design refinements in *one* small area:

**Higher flange** gives rollers a large, "two-zone" contact area, cuts unit pressure on each roller; it also improves roller alignment, thereby reducing wear and resulting "end-play". **Larger oil groove** insures positive roller-head lubrication; increases efficiency and decreases wear. **Shoulder radius** helps the oil groove maintain an unbroken film of lubricant on the roller heads. All three add up to longer bearing life, lower cost to you.

Whether you need tapered or straight roller bearings, check *first* with the Bearing Specialist who handles the Bower line. He stocks both types; gives fast delivery on each. Call today!

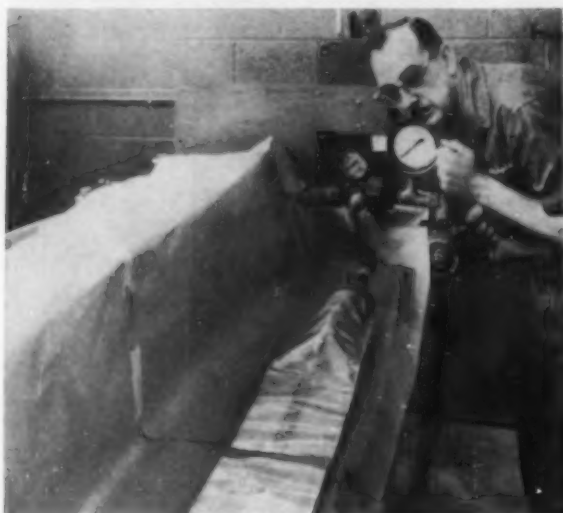
# BOWER ROLLER BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN



# Equipment Developments



## Inflatable Pipe

Thin-walled seamless metal tubing that can be shipped in ribbon form and inflated at the point of use in an interesting development at Calumet & Hecla, Inc., Wolverine Tube Div., Allen Park, Mich. "Strubing" (strip tubing), which will go into experimental production this Fall, offers two major advantages which could be of great impact in industry, according to the firm. First, point-of-use inflatability makes it possible to ship thin-wall tubing economically because only the tube "walls" are shipped and not the "hole." Second,



the process used in making Strubing, cold rolling, provides an economical means of producing thin-walled tubing of materials and in thicknesses either unavailable today or available at a prohibitive cost, notes Calumet & Hecla. The company's engineers have used hydraulic pressure, air pressure, and with some thin-wall sizes, plain tap-water pressure to inflate Strubing. Because Strubing would be delivered in "ribbon" rolls space economy could be very great. The entire ductwork for heating a 7-room house, for example, could be shipped in a box the size of an orange crate instead of in trailer-truck loads, declares the manufacturer.



## Measuring Device

A new electronic measuring device accurate within  $\frac{1}{2}$  in over 5 mi of unobstructed terrain has been introduced by Sweden's Svenska AB through its distributor, Surveyors Service Co., Los Angeles 7. Called the "Geodimeter," it projects a highly collimated light beam to a distant reflector. The light is reflected back to the Geodimeter by multi-prism reflectors to thus determine the distance the light waves have traveled. Designed for surveyors, engineers and mapping parties, the Model 4, priced in the \$4,500 range, is only 12 in square and weighs just 35 lb. It has been calibrated for measuring distances up to 3 mi.



## Easy Shifting

Effortless finger-tip shifting of Caterpillar DW20 and DW21 tractors is provided by the "Synchro-Touch" transmission control, according to Caterpillar Tractor Co., Peoria, Ill. The operator can shift up or down instantly by merely dialing a desired gear range, eliminating usual gear-shifting operations with standard direct-drive transmissions. The gear selector, which control the Synchro-Touch, is located to the right of the operator at arm level. The standard clutch foot pedal is retained but used only when the machine is started from a standstill.



Model C-750 Crawler-mounted REICHdrill Rotary. Can be mounted on one of your used trucks if desired.

Crawler-mounted REICHdrill Rotary, Model C-750. Modification of standard units can be made to suit given conditions.

## IN THE COAL FIELDS **REICHdrills** GIVE YOU MUCH MORE HOLE PER DAY

*And here are 4 rugged reasons why:*

1. Variable rotation speed gives you exactly the right RPM for any material, rock to rubble.
2. Minimum of control levers for all operations means fast, easy handling by one man.
3. All controls actuated by smooth hydraulic power, saving operator time and tiring.

4. Extra heavy-duty construction on all component parts, including pumps, gears and frame means rig can take long, high speed duty without costly maintenance. Plus other field-proven features like hydraulic stem loader and down-the-hole hammer.

Units can be supplied truck or crawler-mounted to suit operating conditions. Holes up to 12" diam. Down pressure to 75,000 lbs. Write for detailed information on REICHdrills.

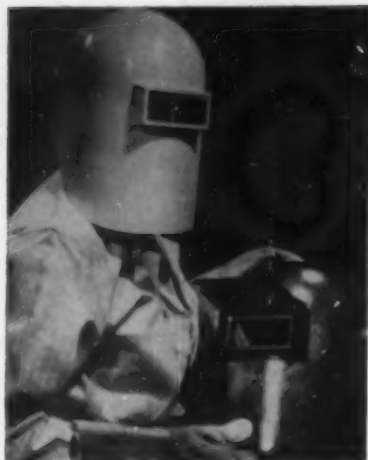
# REICHdrill

Division: Chicago Pneumatic Tool Company

1439 ASH STREET, TERRE HAUTE, INDIANA



## Equipment Developments (Continued)



**WELDING HELMETS**—A new standard-size fiberglass-reinforced plastic welding helmet, with a straight front to provide maximum ventilation and chest protection, has been added to the line of colored welding helmets made by Hobart Bros. Co., Troy, Ohio. The helmet differs from conventional helmets in that the front is molded straight instead of curved to fit underneath the operator's chin. The open bottom permits more air to circulate over the operator's face and the extended front downward provides more chest protection, adds the firm.

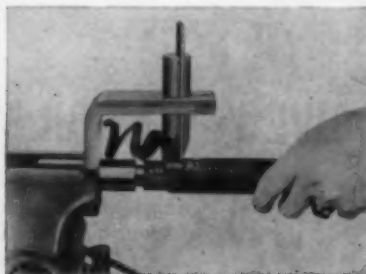


**TEST BENCH**—A low-cost hydraulic system test bench which can be used to check repaired parts in the shop and trouble-shoot operating conditions in the field is available from Schroeder Bros. Corp., McKees Rocks, Pa. "Barrel Bench," supplied either as a built-up unit or in component parts for customer assembly, is reducing costly downtime for users of mining and heavy industrial equipment,

declares Schroeder. The bench, with a work table equipped with strainers, suction filter, micron filters and drains, also incorporates a pump drive unit and other equipment necessary to pin-point defective pumps, valves or cylinders. A 50-gal drum can be used as a reservoir.

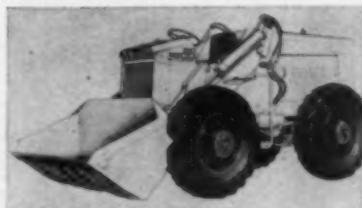


**SHAFT-MOUNTED REDUCERS**—An expanded line of shaft-mounted speed reducers, announced by Dodge Mfg. Corp., Mishawaka, Ind., now includes a new 25:1 double reduction series in 8 sizes. Giant of the new series is Size TD11, described as the world's largest shaft-mounted speed reducer offered from stock. Its reduction ratio is 24.73:1 and it is rated at 154 hp at 75 rpm. Seven other sizes with torque arms are available in either 15:1 or 25:1 ratios along with 3 flange-mounted reducers.



**STRIPPING TOOL**—A new hose stripping tool to remove the outer rubber cover from high-pressure hoses prior to assembling the fitting has been announced by Aeroquip Corp., Jackson, Mich. The F-2282 tool can be used either in a standard shop vice, lathe chuck, drill press or an Aeroquip assembly machine. The firm says that use of the tool will speed up and greatly facilitate the operation, especially where

large quantities of hose assemblies are needed. It is available for hose sizes 4 through 32.



**TRACTOLOADER**—New Model TL-16 Tractor Loader, from Allis-Chalmers Mfg. Co., Milwaukee, Wis., is designed for speeding excavating-loading work in sand and gravel and on construction jobs. The TL-16 weighs 18,000 lb and has carry capacity of 7,000 lb. Available for use with the unit are five buckets, ranging in size from 1½ to 4 cu yd. For rapid loading, buckets tip back 40 deg at ground level and for additional stability while traveling, the buckets tip back at an angle of 45 deg when at carry height (14 in above ground).



**CONTACTORS**—A new line of "arc-quenched" heavy-load carrying contactors having mercury to metal (tungsten) contacts has been announced by Durakool, Inc., Elkhart, Ind. Two sizes of contacts are offered—60 amp, 6.6 kw-t load and 100 amp, 10 kw-t load with combinations for every requirement such as normally open or normally closed contacts and any coil voltage. The manufacturer claims the contactors are ideal for tungsten lighting or the switching of heavy motor loads and are designed to handle DC as well as AC work.



## It's a rugged, rock-strewn strip mine—the place where B.F. Goodrich tires pay off!

**T**ON after ton of rock and overburden crash into that truck, to be hauled out of this Pennsylvania strip mine on a road littered with jagged rock. Trucks work 70 hours a week. Gross loads reach upwards of 44 tons. Sky-high tire costs? Not for this company. They use B.F. Goodrich Rock Service tires. The company reports Rock Service tires give as many as 3,000 hours of service on the original tread—can still be retreaded twice!

B.F. Goodrich builds the Rock Service with a special cut and snag-resisting tread compound. Double-

chevron cleats grip the ground, defy dangerous skids. You get more retreadable tires with Rock Service tires, thanks to the B.F. Goodrich FLEX-RITE NYLON cord body. This B.F. Goodrich nylon withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. No wonder strip mining is a place where Rock Service tires really pay off!

Visit your nearby B.F. Goodrich Smileage dealer today. He has tires for every kind of mining job—tires that will save you money. *The B.F. Goodrich Company, Akron 18, Ohio.*

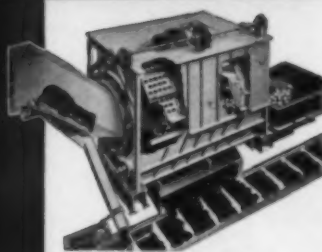
Specify B.F. Goodrich Tubeless or tube-type tires when ordering new equipment



# Smileage!

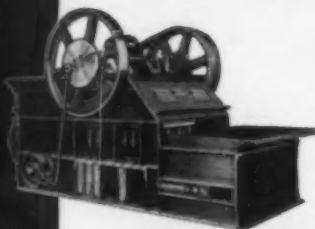
## B.F. Goodrich *off-the-road tires*

## America's most complete line of CRUSHING EQUIPMENT



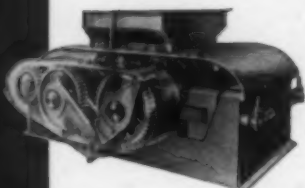
**McNally Pittsburgh  
Rotary Breaker**

This unit allows positive control of top size in handling run-of-mine washery feed. Production of fines is held to a minimum.



**McNally Norton Vertical  
Pick Breaker**

50% Less fines when reducing lump to egg and stove sizes.



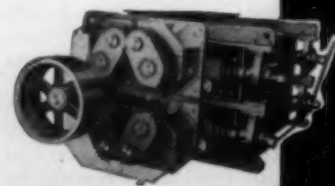
**McNally Double Roll  
Gearmatic ROM Breaker**

Built in tonnage ranges from 750 tph to 1400 tph. Full floating gearmatic drive.



**McNally Gearmatic Stoker  
Coal Crusher**

This unit offers three prime advantages: high volume production, plus accurate sizing, plus low percentage of fines.



**McNally Two Stage Crusher**  
This unit consists of a double roll primary crusher mounted above a double roll secondary crusher—compactly arranged into a single rigid structure.

Available From Stock and on Short Delivery  
For immediate action on complete information write,  
wire, or call

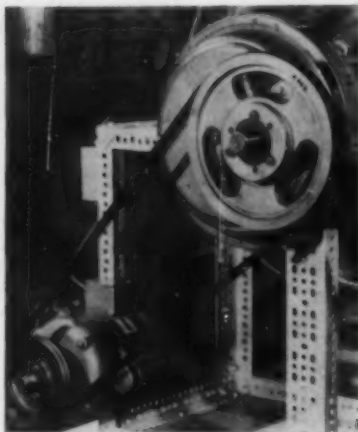
# McNALLY PITTSBURG MFG. CORP.

Pittsburg, Kansas

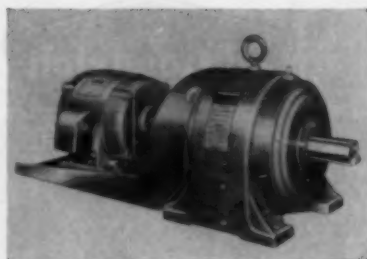
Wellston, Ohio

## Equipment News (Continued)

to handle DC as well as any AC work.



**V-BELT-DRIVES**—New drives from The American Pulley Co., Philadelphia, Pa., use improved V-belts with cross-section areas reduced almost 50% with no loss in life expectancy, it is announced. Called American 3-5-8, the drives can transmit up to 3 times as much power in the same area; or fewer belts, narrower sheaves and small center distances can be used to transmit the same amount of power, according to the firm. The three belt cross section sizes used in the American 3-5-8, notes American Pulley, replace five sizes needed with previous V-belt drives. Each belt cross section fits a particular horsepower range: 3-V belts (3/8-in top width) handle drives from 1-50 hp; 5-V belts (5/8-in top width) handle drives up to 200 hp; and 8-V belts (1-in top width) transmit up to 1,500 hp.



**GEAR REDUCERS**—A line of standard gear reducers with mounting facilities to accommodate separate coupling-connecting Lima standard NEMA motors of suitable horsepower, speed and electrical characteristics has been announced by Lima Electric Motor Co., Inc., Lima, Ohio. The reducers are available for horizontal foot-mounted application in either double or triple reduction units. Double reduction units have a range of 1 through 125 hp with reductions from 230 to 45 rpm. Triple reduction units range from 1 to 50 hp with reductions from 37 to 7 1/2 rpm.



**LIFE-SAVING**—A new line of life-saving equipment which converts pounds of manual effort into tons of power for lifting, pulling, pushing or spreading, has been announced by Mine Safety Appliances Co., Pittsburgh 19. Called MSA "Porto-Power," the new line is designed for fast extrication of victims trapped in automobile, bus or train crashes, mine cave-ins, roof falls, fires, explosions and similar accidents. Power "multiplication" of the equipment is provided by a simple combination of a hand-powered hydraulic pump connected to a hydraulic ram by means of a long flexible hose. Manual pressure on the pump handle can produce up to 20 tons of power applied to the rescue operations. Specially designed attachments make possible bracing of tunnel walls, opening of smashed vehicle doors, raising of industrial equipment or heavy vehicles and other similar operations.

**NEW ENGINES**—Two new 6-cylinder heavy-duty carbureted engines now are in production by International Harvester Co.'s Construction Equipment Div., Chicago 1. The units are the International





Three-Conductor  
Type SO Cord



Shielded Heavy  
Duty Cord



Remote Control  
and Drill Cord



Locomotive Reel



Single-Conductor  
Type SH



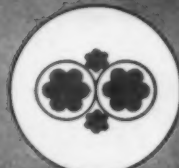
Twin Type W



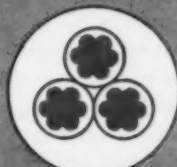
Twin Type G



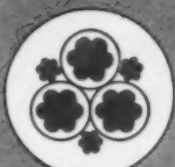
Two-Conductor  
Round Type W



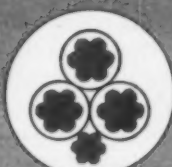
Two-Conductor  
Round Type G



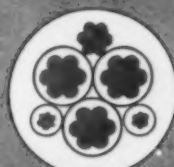
Three-Conductor  
Type W



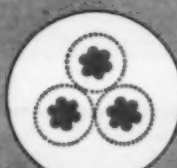
Three-Conductor  
Type G



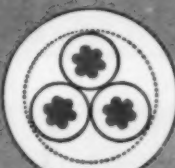
Three-Conductor  
Type PG



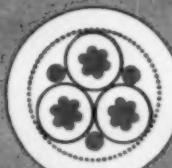
Three-Conductor  
Type PCG



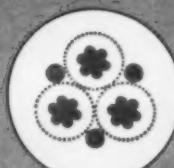
Three-Conductor  
Type SH-A



Three-Conductor  
Type SH-B



Three-Conductor  
Type SH-C



Three-Conductor  
Type SH-D

## *These OKOCORD cords and cables make tough mining jobs easier*

Here are 17 of the basic Okocord constructions Okonite has developed for mining applications . . . for shovels, locomotives, shuttle cars, continuous miners and other equipment.

These tough, mold-cured flexible cords and portable cables are manufactured under the industry's strictest quality control program. Their rugged reinforced Okoprene jacket has superior flame resistance . . . plus the extra durability and flexibility that result from curing in a continuous metal mold. Insulation is tough, resilient and heat-resisting. Okocord conductors flex easily because

they are formed with many fine gauge wires, twisted together with a short lay. And all Okocord cords and cables are color coded for easy phase identification.

If there isn't a standard Okocord cord or cable to meet your need, Okonite will design one . . . for any operation.

For the full story on Okocord cords and cables write for free Bulletin CA-1108, The Okonite Company, Subsidiary of Kennecott Copper Corporation, Passaic, N. J.



where there's electrical power . . . there's **OKONITE CABLE**

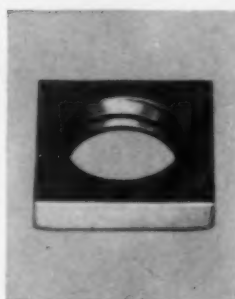
# Have you checked these three **REPUBLIC MINE ROOF**

## ✓ **PRECISION-TAPERED PLUG**



Engineered for proper shell expansion. Note angle of taper in illustration—the precise degree required for strength, dependability, and quick efficient tightening. This improved Republic plug is versatile and adaptable, and is particularly effective in relatively soft formations.

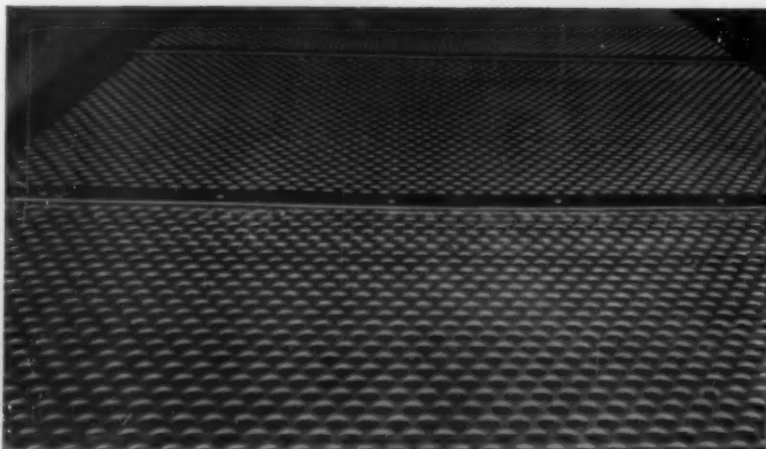
## ✓ **HEAVY-DUTY SUPPORT NUT**



Square nut provides over 40% better support than even the best previous method, yet maintains proper bolt tension by stripping at approximately 50 pounds torque with no damage to bolt threads. Here's another point: nut can be applied either side up to expedite assembly.



**REPUBLIC ELECTRONE GROOVED-END TUBING** offers cost-saving, time-saving advantages in many mining applications. It is quickly and easily joined with Victaulic Couplings. Portable field grooving equipment is available, too. Grooved-End Tubing is ideal for air, water, drainage lines, tunneling, and other heavy duty operations. As work moves ahead, lines can be taken up and relaid to conform with changing needs. Strong, rugged, engineered and produced to meet severe laying conditions. Send coupon.



**SUPERIOR STRENGTH PLUS CORROSION-RESISTANCE** are two of the many features of Republic High Strength Steel which make it ideal for a wide variety of mine industry applications. In mine car and hopper car use, for example, these factors contribute to greatly reduced maintenance. Republic High Strength Steel also provides good impact and abrasion-resistance. It will pay you to evaluate all of these advantages in terms of your equipment performance specifications. For more information, mail coupon.

**SUPERIOR PERFORMANCE OF REPUBLIC ENDURO® STAINLESS STEEL** used for this cleaning plant shaker screen has drastically reduced replacement expense. Reason is the excellent resistance of Republic Stainless to abrasion and corrosion. Other characteristics which pay service dividends in mine equipment applications include its good strength-to-weight ratio, easy cleanability, and high impact strength. In addition, Republic Stainless Steel is readily formed and welded, simplifying both manufacturing and maintenance operations. Mail coupon.

# advancements in BOLTS?

## ✓ IMPROVED SELF-CENTERING HEAD



Compact, one-piece head eliminates need for second washer. Heavy flange, and thick, reinforced washer are guided cleanly and firmly into position in bolt plate. Entire unit forged, for ruggedness and strength. Standard 1 1/2" head available with 3/4" and 5/8" bolt sizes.



## ✓ CHECK THE COMPLETE UNIT

Can be shipped fully assembled as shown here

... to prevent loss of parts, prevent damage to bolt threads, save you assembly costs. Improved Republic RS-1 Expansion Shell, shown, provides extra strength, easy installation, in strata of any type.

*Specify Republic  
Roof Bolt*



*Plates, Tool*



**MATERIAL CONTROL CERTIFICATE** with every Republic Roof Bolt shipment gives specific physical properties of steel used. Data includes yield point in pounds per square inch, yield and break point in pounds, and steel heat number. Guesswork about performance is eliminated!

# REPUBLIC STEEL



*World's Widest Range  
of Standard Steels and  
Steel Products*

### REPUBLIC STEEL CORPORATION

DEPT. CA-8119

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on:

- ☐ Mine Roof Bolts      ☐ ELECTRUNITE Grooved-  
☐ High Strength Steel      End Tubing  
☐ Stainless Steel

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## Equipment News (Continued)

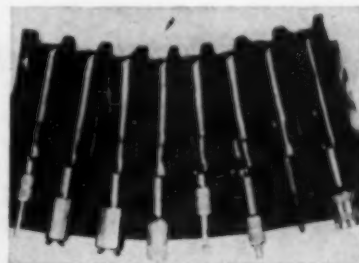
UB-264 with 264-cu-in displacement and 153 hp at 3,800 rpm and the International UB-220, with 220-cu-in displacement and 112 hp at 3,800 rpm. Both weigh 810 lb. Down-draft carburetion give natural downward flow of fuel-air mixture in engine cylinders for more power at high speeds, says the firm, and valve-in-head engines are designed to give maximum power with minimum fuel consumption.

**VIBRATOR**—Cleveland Vibrator Co.,

Cleveland, Ohio, announces a new dual motor vibrator geared for synchronous action. Model RC-31 produces straight line vibration in any direction, says the firm. The unit operates on a rotating eccentric weight principle and features adjustable eccentrics, permitting force of vibration to be varied without changing weights. Variable impact range is from 640 to 2,200 lb.

**MINE HOIST ROPE**—Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., New York 22, has expanded its line of

products for the mining industry with the addition of mine hoist rope with electrical conductors. The mine hoist rope has a large number of applications, says the firm, including telephone communications and the operation of a skip where the conductors can be used to actuate relays to indicate to the hoist operator when the skip is at various locations.



**HAND TOOLS**—A line of hand tools for maintenance of tires on off-the-road equipment is available individually or in a packaged kit from Dill Mfg. Co., Cleveland 3. Eight models are included: a hex valve cap tool, a valve stem refacer, two valve stem rethreaders, a valve stem reseater, a screw driver valve cap tool. They are of rugged construction and equipped with durable shock-resistant handles, adds the manufacturer.

*If*  
**YOUR ANSWER**  
**IS**  
*Yes*  
**TO ANY OF**  
**THESE**  
**QUESTIONS...**

- ☐ Are you loading by the rope-and-hoist method?
- ☐ Are you loading by the belt-conveyor system?
- ☐ Do you ever have bottle-necks at your loading points?
- ☐ Would you like to cut loading costs?

## Then You Should Investigate STAMLER CAR SPOTTERS

Why use fast, modern mining equipment at the face and slow, out-moded methods at the loading point?

When you use STAMLER Car Spotters, you've taken a big step forward in coordinating fast loading with your other modern equipment. Result: perfect "team-play" between your various operations . . . peak efficiency . . . and lowest possible loading costs.

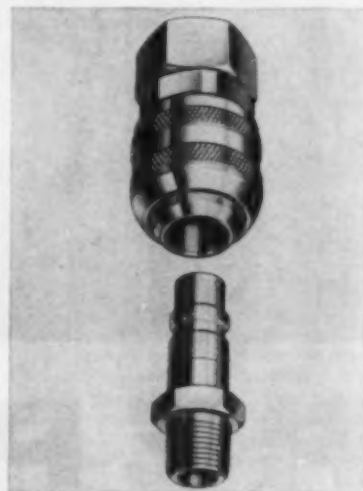
**STAMLER**  
*Hydraulic*  
**CAR SPOTTERS**

**W. R. STAMLER CORPORATION**  
**PARIS, KENTUCKY**

STAMLERs will PAY FOR THEMSELVES in your mines. Ask us to prove it.

SCHROEDER BROTHERS, Exclusive Eastern Sales Agent  
Pittsburgh, Pennsylvania  
UNION INDUSTRIAL CORP., Carlsbad, New Mexico

SALMON & CO., Birmingham, Alabama  
WESTERN SALES ENGINEERING CO.,  
Salt Lake City, Utah



**AUTOMATIC COUPLING**—A new automatic coupling device that, according to the manufacturer, provides the fastest most efficient method available for coupling and uncoupling air hoses, has been announced by Lincoln Engineering Co., St. Louis 20. Called "Flex-O-Matic Coupling," the new product is offered in 4 sizes for 1/4, 3/8, 1/2 and 3/4 in. I. D. hose. No tools are needed to couple or uncouple Flex-O-Matic. A straight push connects the plug, locking it firmly in the socket regardless of air pressure, says the firm. A slight pull on the knurled sleeve disconnects socket and plug,



Sizing and scalping  
are a snap with

## **HENDRICK FLANGED LIP SCREENS**

Use the Hendrick Short Slot Lip Screen for exact sizing. Use the Medium or Long Slot Lip Screen in gravity screens for scalping, removing fines, or discharging loading chutes.

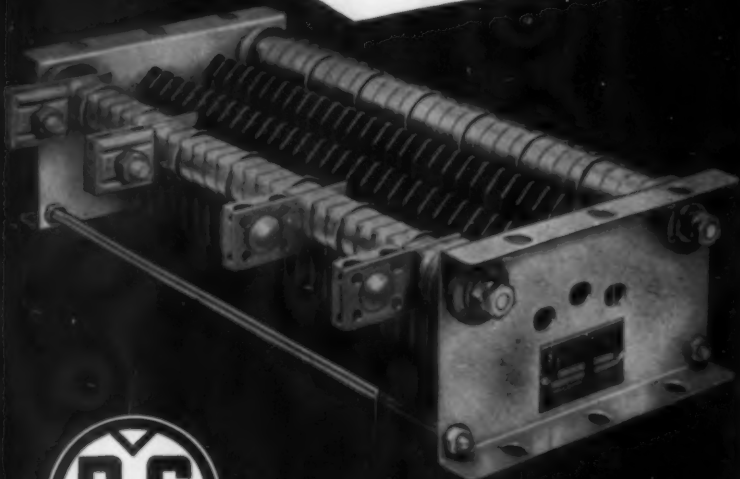
All provide better separation . . . practically eliminate costly delays caused by blinding.

Hendrick Flanged Lip Screens are available in openings from .010 x .025 x  $\frac{1}{4}$  (equivalent to  $\frac{1}{16}$ " Round) to  $10\frac{1}{2}$  x  $11\frac{1}{2}$  x 13 (equivalent to 16" Round). Write to Hendrick today for information on the kind of Flanged Lip Screen that will fit your requirements best.

**HENDRICK** MANUFACTURING COMPANY  
41 DUNDAFF STREET, CARBONDALE, PA.

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT SCREENS • HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING - SHUR-SITE TREADS • ARMORGRIDS • HYDRO DEHAZERS • DISTILLATION COLUMN INTERNALS

There is a  
*difference*  
in Resistors



Resistors have proved  
this for many years

Different, because steel and mica, both extremely durable materials, coupled with P-G exclusive design produce a resistor of great mechanical strength. There is nothing to break. With accurate resistance values and adequate carrying capacities, P-G Resistors outlast ordinary resistors. Tell us your specifications and let P-G solve your resistor problem.

For any job . . . Where constant "trouble free" resistor service is wanted . . . you can safely specify P-G Steel Grid Resistors and get better performance with low cost maintenance.

*The Non-Failable Steel Grid Resistor*



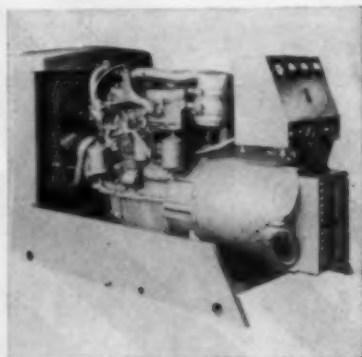
THE POST-GLOVER ELECTRIC COMPANY

OFFICE and FACTORY—Kenton Lands Road, Erlanger, Kentucky

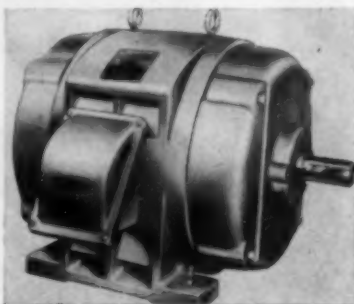
MAILING ADDRESS—Box 709, Covington, Kentucky

## Equipment News (Continued)

automatically shutting off air. A precision-fitted seal prevents leakage and swivel action of the plug in the socket prevents kinking of the hose, it is added.



**DIESEL PLANT**—D. W. Onan & Sons, Inc., Minneapolis, Minn., announces a new diesel-electric generating plant. Completely self-contained with a water-cooled Hercules DD226 diesel engine, Onan "Magneciter" generator and Onan controls in one unit, this engine-generator provides smooth-running, full-rated 25 kw, says Onan.



**DRIPPROOF MOTORS**—A line of drip-proof electric motors in new NEMA rated frame sizes is new from Lima Electric Motor Co., Inc., Lima, Ohio, subsidiary of Consolidated Diesel Electric Corp. They come in ratings from ½ hp at 900 rpm through 150 hp at 3,600 rpm, frame 182 through 445 URS. Newly designed frames are rigid seasoned cast iron with integrally cast feet. Deep-drawn baffle plates in the endbells provide extra protection for the winding. Prelubricated sealed ball bearings need no cleaning. Die cast aluminum rotors are equipped with dual cooling fans and the entire rotor assembly is dynamically balanced, adds the firm.

**GEAR DRIVES**—Wagner Electric Corp., St. Louis, Mo., offers enclosed gear drives to meet the majority of applications for speed reduction units 125 hp and smaller, with output speeds ranging from 780 to 1.2 rpm at 1,750 rpm input speed.



# Inspection by Jack Brunner can net 28% saving on mine power feeder costs

When Jack Brunner looks over your power supply system, it can mean substantial savings on mine power feeder costs . . .

. . . as much as 28% on some jobs! Jack, a Rome Cable salesman in Pittsburgh, does it with Rome MPT—which he can recommend under certain conditions. Two important requirements Jack looks for before making such a recommendation: relatively steady loads; standard protection against overloading.

*Initial cost is lower* than for ordinary mine power feeder cables—as much as 28% in the case of 2 AWG 3-conductor rubber- and neoprene-jacketed 5 kv cable. Compared to these, Rome MPT is smaller in diameter and weighs less, too—easier to handle and install.

*Rome MPT lasts longer*, too, because the Rolene (polyethylene) insulation and special Ro-seal (flame-retardant polyethylene) jacket combine to give you outstanding resistance to chemicals, moisture, and abrasion.

*Ground fault protection* is assured by individual copper shielding of power conductors. And bare ground wire—in direct contact with the shielding—provides a low-resistance circuit in the event of ground faulting of equipment.

See your Rome salesman for more information on Rome MPT—or mail the coupon below.

Rome MPT can be used in boreholes, shafts, trays, aerially or underground. Sizes range from 6 AWG to 250,000 CM. A three-conductor cable, it's rated up to 5,000 volts.



◀ **JACK BRUNNER** has been working out of Rome's Pittsburgh office since April, 1958. Prior to coming with Rome, in 1957, Jack served for two years as an electronics instructor at Aberdeen Proving Grounds for the U.S. Army. A degree from Cornell University in mechanical engineering—followed by Rome's extensive training program—qualifies him to intelligently tackle any mine wiring problem you might have. Just call him!



## MEET THE MAN

WHO'S DEDICATED  
TO YOUR JOB  
YOUR ROME CABLE  
SALESMAN

**ROME CABLE Department 15-9  
Rome, New York**

- ☐ Please send me more information on the above.
- ☐ I want to "Meet The Man" who can tell me more.

Name.....

Title.....

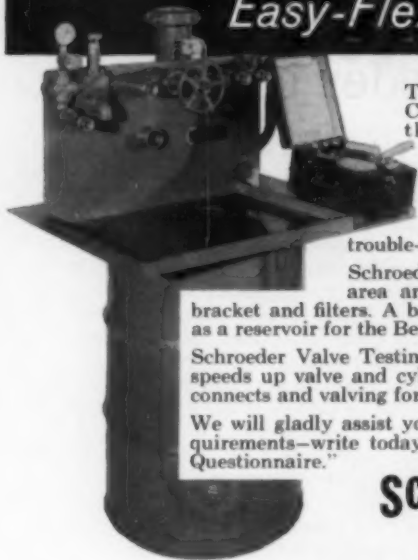
Company.....

Street.....

City..... Zone..... State.....

# BUILD YOUR OWN SCHROEDER HYDRAULIC BARREL TEST BENCH

*Easy-Flexible-Low Cost*



The Schroeder Portable Hydraulic Circuit Tester now teams up with the newly-designed Schroeder Bench Table to provide fast, accurate, and complete test bench instrumentation. Yet, the Tester may be removed from the Bench quickly for trouble-shooting in the mine or in the shop.

Schroeder Bench Table serves as work area and support for Tester, valve test bracket and filters. A barrel supports the Table and acts as a reservoir for the Bench.

Schroeder Valve Testing Header added to Barrel Bench speeds up valve and cylinder testing; provides quick disconnects and valving for faster, efficient operation.

We will gladly assist you in determining your Bench requirements—write today for the Schroeder "Test Bench Questionnaire."

**SCHROEDER BROTHERS**  
CORPORATION

Nichol Ave. • Box 72  
McKees Rocks (Pittsburgh District), Pa.

# QCF Load-support MINE CAR WHEELS

Quick-chilling after casting gives QCF Chilled Tread Car Wheels extra resistance to abrasion and wear, gives you real economy through long service life. Gray iron center costs less to mount, reduces vibration and effects of stress concentration. Curved plates support tread at load center: minimize damage to treads.



Cross Section of QCF "Load Support" Mine Car Wheel showing: (1) uniform depth of hardening, (2) extra heavy overhang, (3) support at center of tread.



For further information,  
just ask your QCF representative.

**AMERICAN CAR AND FOUNDRY**  
DIVISION OF ACF INDUSTRIES, INCORPORATED  
780 THIRD AVE., NEW YORK 17, N. Y.

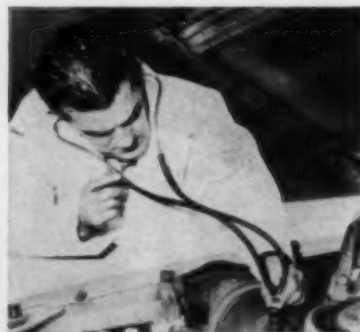
Sales Offices: New York • Chicago • St. Louis • Cleveland • Washington • Philadelphia • San Francisco  
Berwick, Pa. • Huntington, W. Va. • Plants: Berwick, Pa. • Huntington, W. Va. • St. Louis, Mo.

## Equipment News (Continued)

Duri-Rated helical gears, says the firm, are heat-treated after cutting by a special process to obtain maximum hardness, shock resistance and extra wear life. Extra capacity bearings give high overhung load ratings. Splined assembly of the drive pinion to the input shaft assures accurate alignment, it is noted.



**BELT REPAIR**—To meet the need for long patches suitable for repairing frayed or injured edges on conveyor belts, Automatic Vulcanizers Corp., New York 13, has added long patches to its line of Pang repair material. The patches have feathered thin edges and come in 1½ x 20-in and 3½ x 20-in sizes. They require no heat and no equipment and cure at low temperature, notes the firm.



**HEARING FAULTS**—For diagnosing faults in machines and pipe lines and other similar applications, new low-cost industrial stethoscopes are offered by Edmund Scientific Co., Barrington, N. J. The company says the faintest knocks, taps, creaks and leaks can be plainly heard, making the tool invaluable for tuning up motors and compressors, checking running machinery and diagnosing mechanical flaws.

**REGULATOR**—Minimum breathing effort and high volume of air flow are assured the user of respiratory equipment by an improved design of its Variable Flow Demand Regulator, reports Mine Safety Appliances Co., Pittsburgh 8. The



Dravo announces the launching of the 3200-hp towboat *Joey Chotin*. The first of a stock group, this new towboat will soon be in service for the Berwick Bay Towing Company of New Orleans, La. Still another Dravo stock 3200 is available for August, 1959, delivery. Address inquiries to: Dravo Corporation, Pittsburgh 25, Pa.

**DRAVO**  
CORPORATION



## Equipment News (Continued)

regulator responds automatically to the breathing requirements of the wearer and is said to supply the exact amount of air or oxygen regardless of the work load. It operates on plant compressed air or reduced pressure from cylinders of air or oxygen. The regulator is firmly held in place by a newly designed belt clip, approved by the Bureau of Mines.

EXCAVATOR-LOADER—The TL-12



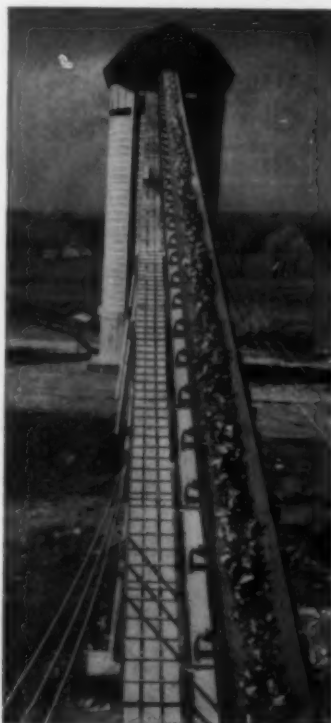
TractoLoader, made by Allis-Chalmers Mfg. Co., Deerfield, Ill., is specially designed to speed and simplify excavating-loading work, including backfilling and

stripping. With 13,200 lb of breakout force, the TL-12 is ideally suited to dig out hard-packed materials, says the firm. The loader, weighing 12,100 lb, features power steering for fast easy maneuvering. Four-wheel drive provides stability and traction required for fast loading even when operating under adverse ground conditions, adds the firm.

## BELT FAILURES? Switch to NEW YORK RUBBER!

New York Rubber, famous since 1851, manufactures belt designed to meet trouble—and overcome it! Built for the most severe service demands, there's a New York Rubber belt designed to solve your problem. Mineral mining, quarrying, coal mining—these activities often require a belt that will show superior resistance to sharp and abrasive materials, frequently in the presence of oil and grease conditions. Fire, too, takes its toll of conventional belts.

That's why it will pay you to investigate New York Rubber. A brief description of four of our most popular belts follows. Write on your letterhead for more complete details on these and other superior New York Rubber Belts.



## REDUCE FAILURES

with these New York Rubber belts:

**STONORE**—Highest quality, for most severe service. Handles heavy ores, trap rock, crushed stone, coarse broken glass, slag, cement clinkers, direct feed from digging and mining machinery. Mildew-proof.

**DEPENDABLE**—For handling coal both under and above ground, sand and gravel, trap rock, sulphur, lime and limestone. Ideal for sub-zero temperatures. Mildew-proof.

**NEOPRENE**—Resists oil and grease conditions adverse to natural rubber. Handles caustics and coal briquettes. Heat-resistant to 250°F. Mildew-proof.

**TEMP-PRENE**—A neoprene compounded for fire resistance and severe, rough surfaces. Mildew-proof.

\*Acceptance designation: "Fire Resistant, U.S.B.M. No. 28-14".



**NEW YORK RUBBER**

CORPORATION

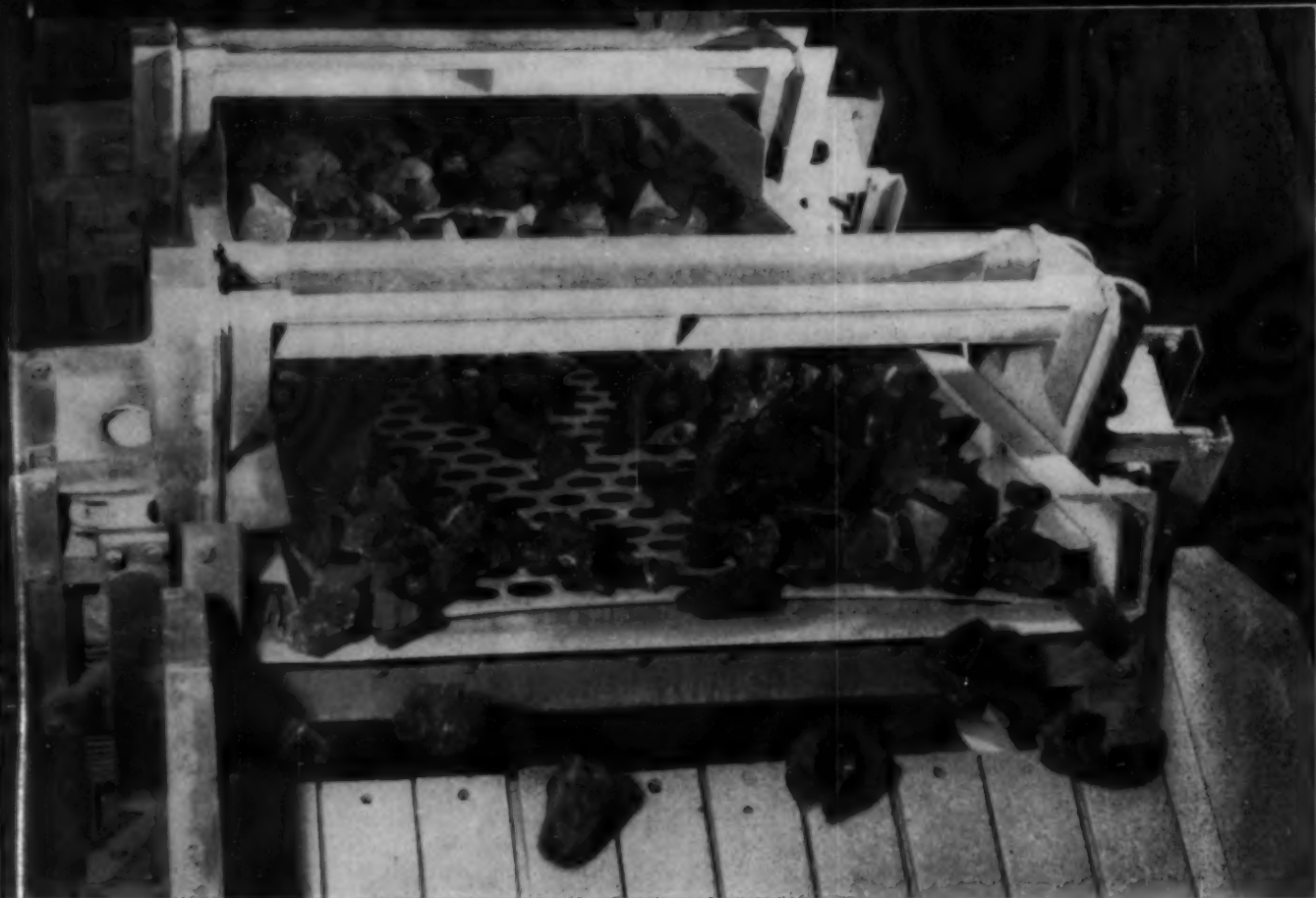
(Established 1851)

100 PARK AVENUE • NEW YORK 17, NEW YORK



**NEW HYDRAULIC FLUID**—Sun Oil Co., Philadelphia 3, announces a fire-resistant fluid designed for the mining industry and reasonable in cost. Called "Minesafe," the new fluid provides excellent lubrication with dependable fire protection, according to the firm. In the photos the noncombustible properties of the fluid, MIL-L-7100, are shown above compared to the ignitable properties of a conventional fluid. Made from a well-refined high-quality base-oil compound to form a stable water-in-oil emulsion, the fluid may be used at pressures up to 2,000 psi with all hydraulic mining machinery.

**VERTICAL PUMPS**—Rubber-lined vertical sump pumps now being produced by Denver Equipment Co., Denver 17, have capacities from 20 to 1,400 gpm in pump sizes from 2x2 in. to 6x6 in. Workable in small spaces on low horsepower without airlocking, the pumps feature casing liners and runners of soft rubber, and bonded-to-steel inserts



with **CROSS** perforated steel screens . . .

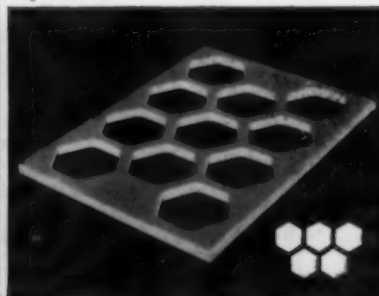
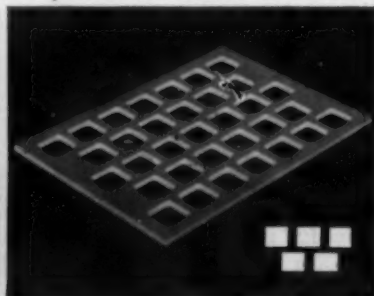
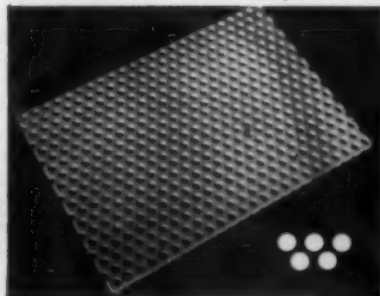
## You can save up to 20% on replacement

For many coal screening applications, **CROSS** Perforated Screens made from high-quality steel can save you as much as 20% on replacement costs. Tests prove that **CROSS** Perforated Screens have a service life nearly double that of other types of coal screens. And, because **CROSS** screen plates are manufactured as rigid, one-piece units, there is no problem of stretching or loss of screen tension. You save on down-time costs, too, because screen ad-

justments and reshaping are eliminated.

**CROSS** PERFORATED steel screens are available in a wide range of sizes with uniformly spaced square, hexagon or round perforations, staggered for increased capacity and efficiency. For additional information on **CROSS** Perforated Screens for shakers, vibrators and revolving screens, write **CROSS** PERFORATED METALS, National-Standard Company, Carbondale, Pa.

**CROSS** makes a complete line of perforated screens to fit every need



**CROSS** Perforated Metals

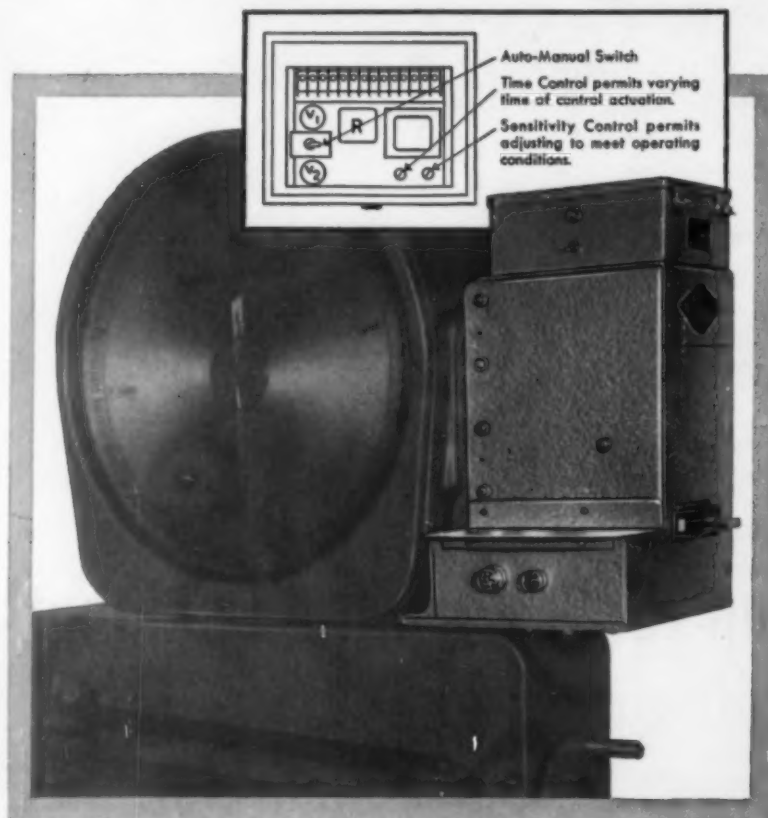
Carbondale, Pa.

**NATIONAL**



**STANDARD**

# NEW Fairbanks-Morse Electronic Weight Detector



## Prevents incorrect weighing . . . stops costly errors!

With the new Electronic Weight Detector, true weight of any load can be automatically obtained and recorded without need of a weighman. Where a weighman is used, it is impossible for him to record incorrect weights or start a sequence at the wrong time. When desired, a flip of the switch can disengage the Weight Detector entirely from the system. *This is the first fully-reliable control of its*

*kind available in the scale industry.*

To completely automate your weighing—to be sure that your weights are correct—to protect yourself by completely policing your entire weighing operation—contact your nearby Fairbanks-Morse Field Engineer, or write directly to Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Illinois for complete information.

See Sweet's Plant Engineering File for full line of F-M Scales



## FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL, DUAL FUEL AND GAS ENGINES • ELECTRIC MOTORS  
GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

## Equipment News (Continued)



which wear as much as 6 times as long as iron or steel parts, according to the firm. The sump pump, which can work as deep as 12 ft, is ideal for cyclone service because of its extremely flat pumping curve, adds the firm.

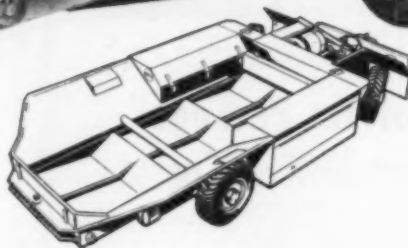


**SEALING EXPLOSIVE BAGS** — Bemis Bros. Bag Co., St. Louis 2, has developed a 25-lb. heat-sealing unit for closing poly-lined Flexibly (multi-creped) kraft bags used to package explosives. It was designed especially to seal a new waterproof explosives bag recently introduced for wet bore holes. The unit, operating on a 110 V system, forms a  $\frac{3}{4}$ -in seal through the Flexibly sheets in 5 sec. It is activated by a foot pedal, leaving the operator's hands free to align the bag. When the pedal is depressed the pressure plate moves toward the heating element and locks the bag between the jaw for sealing. Bemis notes that the machine, which is thermostatically controlled, is completely safe.

**WEIGHT DETECTOR** — Fairbanks, Morse & Co., Chicago 5, has announced an electronic weight detector for application to its dial scales. It is designed



# LARGE TONNAGES—SHORT HAULS



SC-3D is rugged throughout with heavily reinforced steel doors. Other Kersey Shuttle Cars built with conveyor bottom discharge and also to operate from cable using either D. C. or A. C. current with heights as low as 24".



..... Savings by the minute  
with New **KERSEY Drop Bottom Shuttle Car**

**Initial Investment 1/3 cost of other shuttle cars to do same job!**

Rough and tough Kersey Model SC-3D Drop Bottom Shuttle Car (only 26" high, 2-1/2 ton capacity) takes full advantage of using battery power for most efficient, economical mining of low coal with hauls up to 500 feet.

Driven by rugged low voltage motor and gear reduction to the drive wheels — plus drop bottom, self reclosing doors — it's the new one man, low cost, automatic operation for discharging load in pit or bin.

Initial investment of 1/3 cost of other shuttle cars to do the job, all adds up to mighty good reasons why it will pay you to send for full information on Kersey Drop Bottom Shuttle Cars today.

**SALES  
PARTS  
SERVICE**

LONDON

OAKWOOD

BLUEFIELD

WISE

**KERSEY**  
MANUFACTURING CO.  
INC.  
BLUEFIELD, VIRGINIA

**GET ALL THE FACTS — CLIP  
AND MAIL THIS COUPON TODAY!**

**KERSEY MANUFACTURING COMPANY**  
Bluefield, Virginia

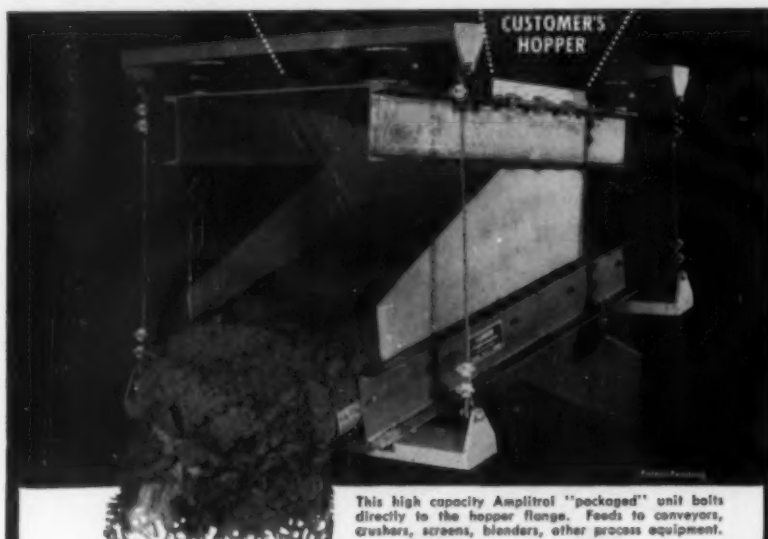
Name

Company

Address

☐ Send at once all the facts on the new Kersey Drop Bottom Shuttle Car.

☐ Have your representative get in touch with us.



## "Feeder-Hopper Bottom Package" Reduces Design, Installation Costs!

For the first time a feeder is offered as part of a complete pre-engineered feeder-hopper bottom package. When you design with Carrier Amplitrol feeders, you merely design a hopper flange to bolt to the packaged unit. *This saves you both engineering design and installation costs!*

This preassembled packaged unit is built around the revolutionary new Amplitrol feeder—first mechanical vibrating feeder with variable, stepless control—and includes the hopper bottom, flanged hopper connection, skirt plates,

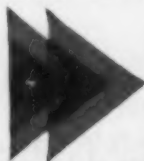
regulating gate, isolation and suspension supports.

The feeder-hopper bottom unit is offered in two models—one for high capacity applications and one for maximum control.

Amplitrol's exclusive long-stroke drive handles higher capacities by automatically compensating for headload. This allows larger hopper openings, reduces bridging and hang-up. The simple, fast-responding pneumatic control system operates manually or in automatic response to any standard process instrumentation.

Send for new Bulletin No. 591 describing Amplitrol "package" in detail, Carrier Conveyor Corporation, 256-A North Jackson Street, Louisville, Kentucky.

**CARRIER**  
**NATURAL-FREQUENCY**  
**VIBRATING EQUIPMENT**  
*Engineering Specialists in Vibrating Equipment*



CONVEY • FEED  
DEWATER • SCREEN  
COOL • AGGLOMERATE  
DRY • SCALP • COAT  
DISTRIBUTE • ELEVATE  
• FLATTEN BAGS

## CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS  
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING • GROUT HOLE DRILLING

**Skilled crews and complete stock of core drills  
and accessory equipment maintained at all times**

**Core Drill Contractors for more than 60 years**

**JOY MANUFACTURING CO.**  
Contract Core Drill Division  
MICHIGAN CITY, INDIANA

## Equipment News (Continued)



to provide the bridge between manually controlled and truly automatic weighing, says the firm. Eliminating visual observation or waiting periods to allow the scale to come to a true weight, the new detector definitely determines that the correct weight has been reached before recording the reading.

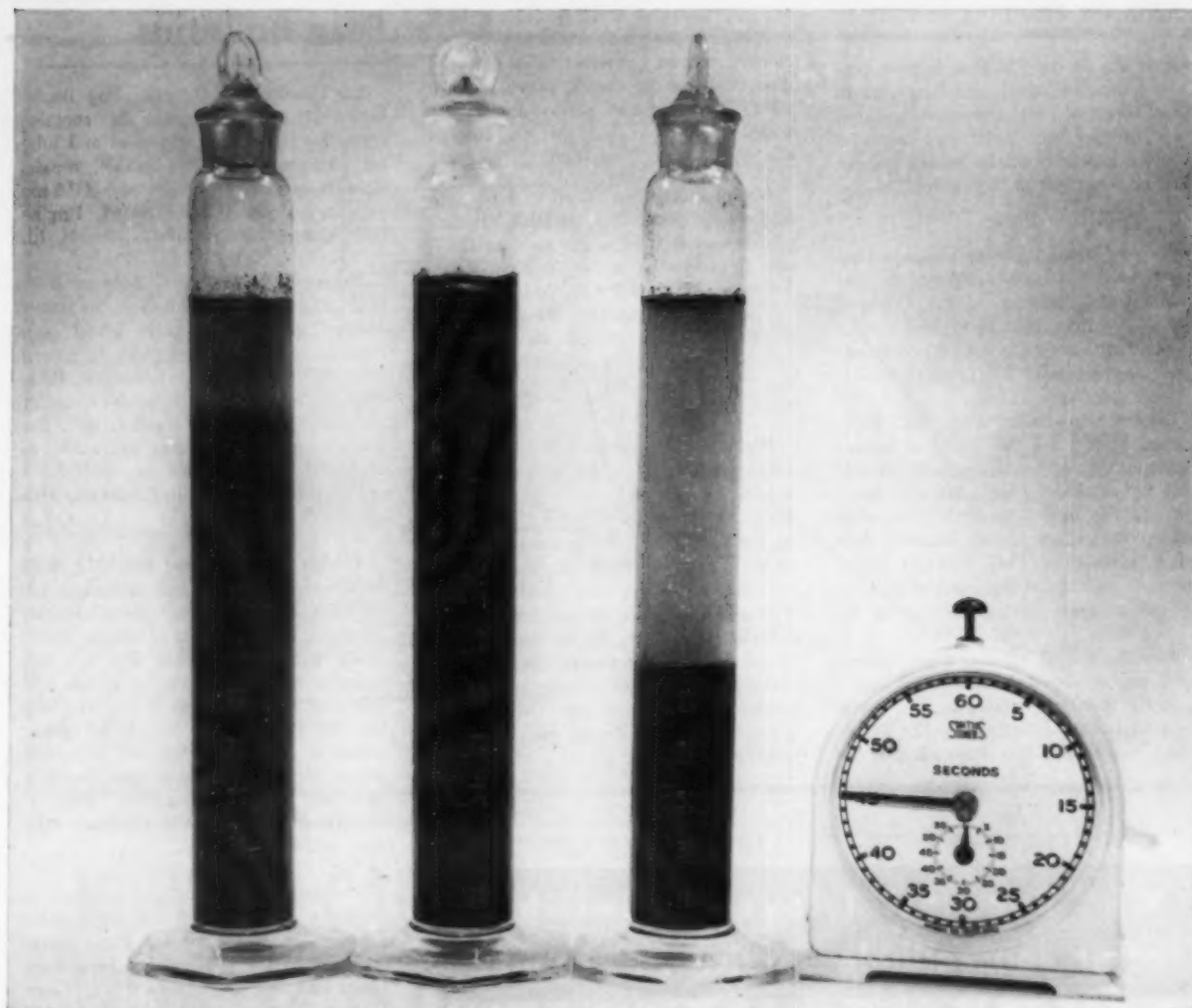
## Equipment Shorts

**New Lubricant** — Molykote Type 223X, new heavy-duty gear lubricant, is being marketed in SAE 90 and 140 grades, reports Alpha-Molykote Corp., Stamford, Conn. The solvent-refined, paraffin-base lubricant is said to have equally good load-carrying ability through the entire range from the lowest to the highest sliding velocities. Its flash point is 390F and its fire point 420F.

**Angled Dozer** — Angling blade bulldozers for all models of Caterpillar-built Traxcavators provide greater maneuverability, better operation in restricted areas and increased visibility for the operator, according to Balderson Inc., Wamego, Kan. Interchangeable with Traxcavator buckets, the new Balderson dozer blades may be angled right or left or used in straight position for complete versatility.

**Air Drill** — The Acker Drill Co., Inc., Scranton, Pa., announces an air-powered "Packsack" diamond core drill. Lightweight and portable, it provides completely safe underground drilling, according to the firm. Features include low diamond cost because of a thinner-face 1 3/4-in bit, reduced operational water requirements and a detachable air jack leg to permit passage of cars in the shaft.

**Loading Station** — Two new developments in the Nolan automatic mine car loading station are announced by The Nolan Co., Bowerston, Ohio. Automatic selection of the stroke of the Portafeeder



These three graduated cylinders show the relative effectiveness of Separan AP30 (right) and another material commonly used for flocculation (left). The center graduate has had no treatment. Notice that Separan AP30 settles solids faster and clarifies water better than the other material.

## An Important Announcement From Dowell to all Coal Producers

Separan AP30®, an exceedingly efficient flocculation agent, is now being offered to the coal industry by the Dowell Division of The Dow Chemical Company.

Separan AP30 is an anionic polymer developed by Dow specifically for the flocculation of coal and clay-like slimes. In many cases, it can settle solids out of coal wash water at less than half the cost of other flocculation agents. Separan AP30 can achieve settling rates of 20 to 25 feet per hour at concentrations between 0.01 and 0.20 pounds per ton of solids. This means lower material costs and lower handling costs. Often, Separan AP30 increases the effective capacity of associated equipment without losing clarification effectiveness.

Clarification of wash water is usually so complete that contamination ceases to be a problem. In most

cases, water may be used over and over in a re-circulating system without solids build-up.

Since Separan AP30 is so different from commonly used flocculants, different techniques apply. That is why Dow has appointed its Dowell Division to aid operators in engineering the best technique for each system. Use this combination of Separan AP30 and the engineering services of Dowell to help lower your coal-washing costs.

Separan AP30 is available from Dowell stations in the major coal-producing areas of the United States. For more information or consultation, contact the Dowell District office at 1918 Highway 41 North, Evansville 7, Indiana. The telephone number is HArrison 5-1353. If you wish, a Dowell Engineer will call on you promptly, without cost or obligation.

Services to the coal industry

**DOWELL**

DIVISION OF THE DOW CHEMICAL COMPANY



## Equipment News (Continued)

unit in the loading station is now possible, permitting short and long cars in mixed trips to be fed and loaded without delay in operation. High and low cars in mixed trips also can be loaded without hesitation by instant adjustment of the loading bar.

**Compact Drive**—A new compact conveyor drive has been developed by the Crichton Co., Johnstown, Pa. The unit is available from 1 to 10 hp and can be supplied in any one of 30 different ratios ranging from 2½:1 up to 215:1.

**Transmission**—Fuller Mfg. Co., Kalamazoo, Mich., has developed a heavy-duty transmission for off-highway service. Said to feature long wear life and easier shifting, the new 5-speed high-capacity transmission offers higher capacity than other models in Fuller's 1220 Series because axial thrust has been eliminated by use of spur gearing throughout the

**New Tractor**—A 4-wheel-drive rubber-tired tractor shovel with 5,000 lb carry capacity is in production at The Frank G. Hough Co., Libertyville, Ill. To replace the Model HU Payloader, it re-

portedly provides more power for both hydraulics and traction and has a more efficient torque converter. The new engine, gasoline or diesel, provides from 90 to 92 hp. Front service brakes are sealed to keep out dust, dirt, and foreign matter.

**Compressor**—The Le-Roi 125G1, a single-stage piston-type portable air compressor powered by a gasoline engine, is now in production at Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1. With a 125-cfm capacity, the new model provides enough 100-psi air to power two heavy or three medium breakers or one light wagon drill. Rated speed is 1,300 rpm.

**Welding, Cutting**—A gas welding and cutting outfit called "Aircomite" is available from Air Reduction Sales Co., New York 17. Moderately priced, according to the firm, the outfit enables operators to weld steel up to ¾ in thick, cut up to 1-in steel plate, braze and hardface. The outfit includes one oxygen and one acetylene regulator, the former having a 60-psi working pressure gage and a 4,000-psi high-pressure gage with silver-soldered tube connections. On the acetylene regulator a 30-psi and a 400-psi gage are used.

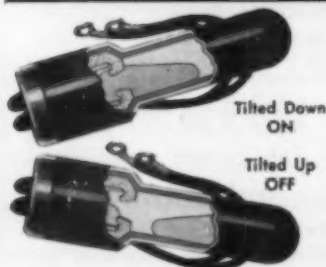
## Free Bulletins

**Log Book**—New "Engine Log Book" covers 13 mo of operation and contains space for daily entries on fuel and lube oil consumption, parts, service, repairs as well as monthly entries and a 12-mo summary sheet. Booklet 20167, Engine Div., Caterpillar Tractor Co., Peoria, Ill.

**Sheave**—Allis-Chalmers' Bulletin 20B-9125 tells why "The All-New 'Adjustex' Sheave" pays off in lower initial cost, reduced overall length and improved balance at all pitch diameters. It is offered in all popular pitch diameter sizes and a new "C" section size, the 7.5/9.7. Adjustex sheaves are made in 2, 3 and 4 grooves for use with A, B or C section belts. Allis-Chalmers, Milwaukee 1, Wis.

**Tractor Units**—Catalog MS-1312 gives engineering features and operating advantages of the TS-260 motor scraper powered by new Allis-Chalmers 16000 diesel engine developing 230 hp, and includes information on the 20-ton TR-260 rear dump wagon. A second Catalog MS-1251 covers the HD-6 diesel powered crawler tractor and its accessories. Both catalogs include specifications and are fully illustrated. Construction Machinery Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

## WHY Durakool Relays and Switches offer you reliable service . . . Longer

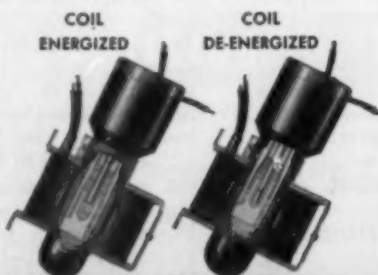


Durakool products minimize wear from arcing and have virtually eliminated destructive heat rise (less than 50°C rise over ambient) and corrosion. Contacts operate under sealed in (50 p.s.i.) hydrogen gas. Result: unequalled durability on heavy or light loads as well as highly inductive, incandescent D.C. loads. The Durakool steel-clad (non-breakable) mercury relays and switches are built for continuous fast-cycling schedules.

Timer-relay service life has increased up to 6 times former models. Plunger designed to stay free, making unit practically "fail-safe." Tilt switches come in 7 sizes, 1 to 65 amperes. Timer relays available in any combination of operate-release-time-delays from 0.15 sec. to 20 sec.—normally open or normally closed action.

For more information on timer-relays and switches, write:

**DURAKOOL, INC.**  
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1969 Avenue Rd., Toronto, Ontario  
301 Fifth Ave., So., Minneapolis, Minn.  
4747 Bronx Blvd., New York 70, N. Y.

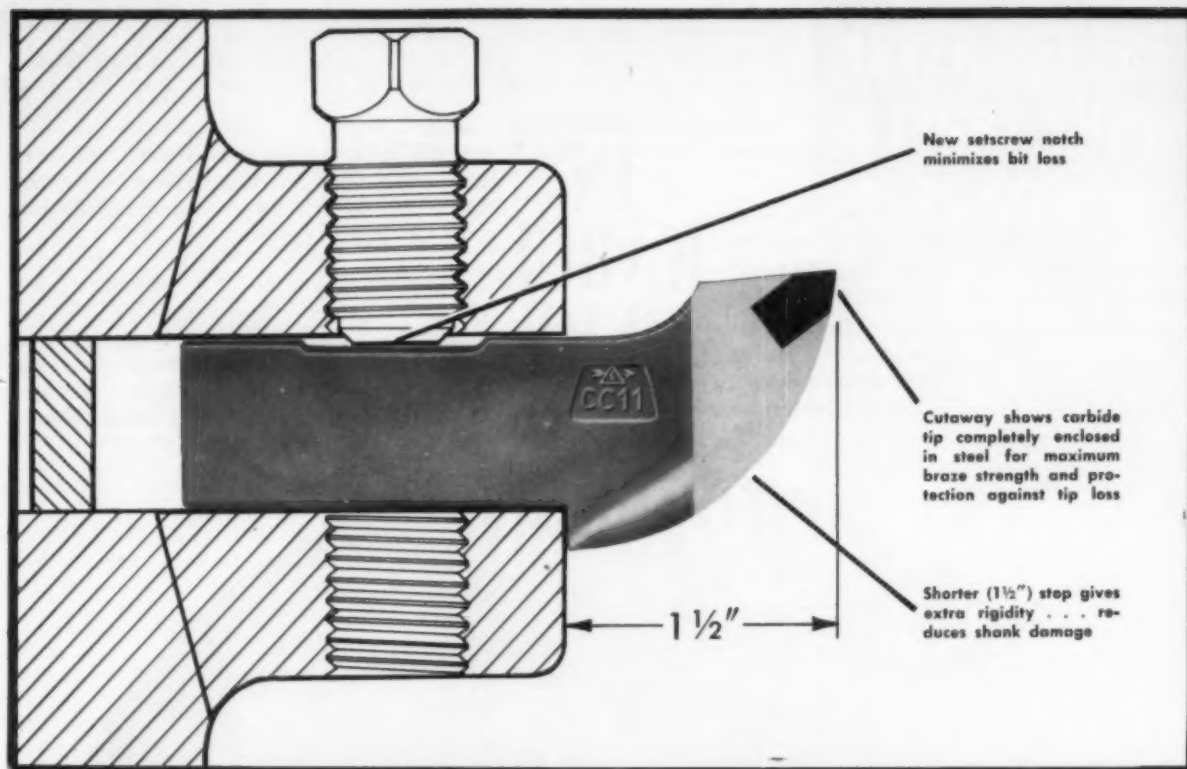


**Durakool**  
ALL STEEL MERCURY SWITCHES

**Standardized Drives**—Information on the most extensive line of standardized Gearmotors, Motogears and Fluid Drives available to the industry has been combined into new 48-pp Book 2747, "Gearmotors, Motogears and Fluid Drives" available from Link-Belt Co., Dept. PR, Chicago 1, Ill. It describes the functions of these drives, lists accessories and provides detailed selection data, dimensions, overhung load ratings and mountings.

**Portable Switches**—In new literature with full illustrations Joy features its new Pendant Push-Button Station, a weathertight, corrosion-proof design completely insulated and encased in "Hycar," an improved synthetic rubber compound and listed as available in 4-, 6-, and 8-button styles. Electrical Products Div., Joy Mfg. Co., Dept S-90, St. Louis, Mo.

**Motor Graders**—Two-color 8-pp Booklet DE914 "Top Performers," describes the main features of Caterpillar's three motor graders. The 150-hp Cat. No. 14 is cited for its turbocharger, high clearance moldboard, dry-type air cleaner, oil clutch and other features. The No. 12, with 115 hp, is detailed as "a favorite for two decades." Low investment for high utility and economy is emphasized for the 75-hp No. 112. Ad-



## NOW—A CARBOLOY® ENCLOSED-TIP BIT WITH 1 1/2" STOP FOR EXTRA TOOL LIFE

The new Carboly CC-11 enclosed-tip bit has all the famous features and stamina of the Carboly CCS-2, the most widely accepted mining bit in the industry. But its shorter (1 1/2") stop gives the CC-11 extra rigidity to reduce shank damage when impurities are encountered.

**Enclosed in steel**, the cylindrical carbide tip in the CC-11 is given positive protection against breakout. It's held firmly in place by a combination of braze and mechanical holding, and positioned to withstand heavy cutting forces. The CC-11 holds up where other designs fail.

**New setscrew notch** keeps the CC-11 from slipping out of its holder if setscrew should become worn or loosened by vibration. Bit loss is kept to a minimum.

The CC-11, like all bits in the complete line of Carboly mining tools, is stocked by your local Authorized Carboly Mining Tool Distributor for immediate delivery. For additional technical information or in-mine assistance call him today. Or write: *Metallurgical Products Department of General Electric Company, 11120 E. 8 Mile Blvd. Detroit 32, Michigan.*

**CARBOLOY®**  
CEMENTED CARBIDES

GENERAL  ELECTRIC

On the contrary, the problem here in Kabul is *not* enough food!

Fighting hunger in places like Kabul is just one task of the UN's 19 Specialized agencies and international organizations. Elsewhere, UN teams combat floods, wage war against disease, fight illiteracy.

In these practical ways, the UN brings new hope and happiness into the lives of peoples less fortunate than we are—at the same time cuts down the discontent that could easily erupt into another war.

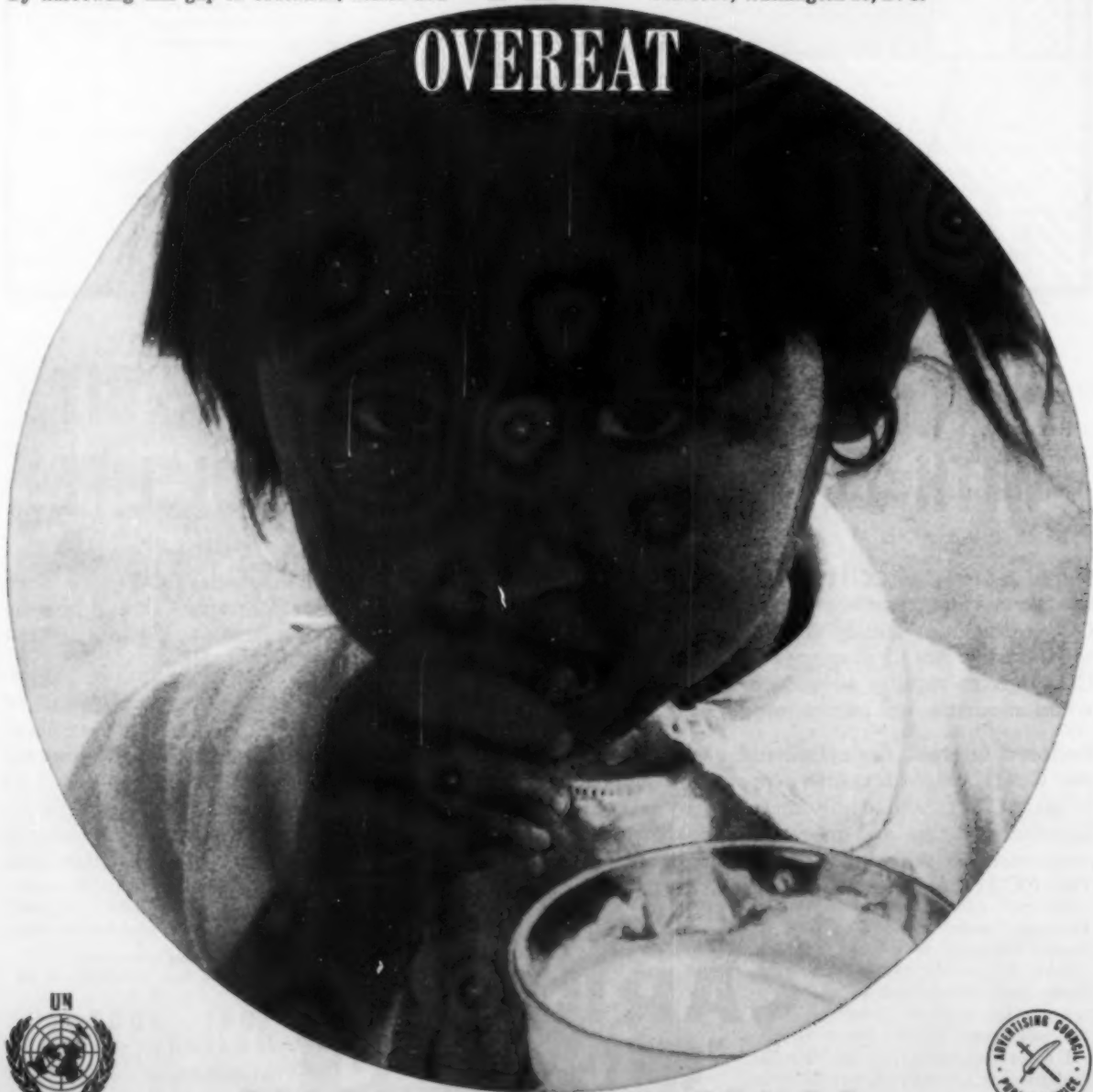
By narrowing this gap in education, health and

# IN KABUL VERY FEW

nutrition between the world's "haves" and "have nots"...as well as providing a forum for political discussion...the UN has become mankind's *last great instrument of peace.*

Be an ambassador of the UN in *your* community. The world's leaders actively support the UN...but *your* good will, understanding and support are the best guarantees of its success. For the informative free pamphlet "The UN in Action," address: United States Committee for the United Nations, Box 1958, Washington 13, D. C.

# OVEREAT



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UNITED STATES COMMITTEE FOR THE UNITED NATIONS, BOX 1958, WASHINGTON 13, D. C.



## Equipment News (Continued)

vertising Div., Caterpillar Tractor Co., Peoria, Ill.

**Scrapers**—"Make the Right Turn," 8-pp Booklet D912, explains the use of scrapers and wagons with the Caterpillar DW20 wheel-type tractor. This brochure describes the proper applications of the No. 456 Scraper and new No. 482 Scraper with 24 cu yd struck capacity, 34 cu yd heaped, and explains features of the DW20 Tractor. Write to the Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

**Tractor Value**—Performance, dependability, matched equipment, serviceability and dealer organization are the five standards for measuring big tractor value as described in "Five Yardsticks," new 8-pp Booklet 33341, available from the Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

**Butyl Cable**—Publication of a 32-p catalog on its Butyl (AB) cable is announced by Anaconda Wire & Cable Co., New York 4. This all-purpose cable, trade-marked "Durasheath," provides an answer to an exceptionally wide range of power requirements, says the firm. Featured in the bulletin is information on design, insulation available and performance highlights.

**Lubricants**—An illustrated folder providing detailed information on D-A Universal lubricants has been published by the D-A Lubricant Co., Inc., Indianapolis, Ind. The folder describes reasons for creation of D-A "low-activity" heavy-duty gear lubricants and the advantages of using them.

**Controls**—A 12-p manual entitled "Visible Control for Machine Systems" has been announced by Remington Rand Div. of Sperry Rand Corp. The manual explains how visible record keep-

ing systems and housing equipment facilitate sound management decisions and at the same time get the work done faster by machine operations.

**Motors and Locomotives**—Bulletin GEA-6940, describing the General Electric 27-, 37- and 50-ton mine locomotives, and Bulletin GEA 6974, which discusses continuous mining machine motors, are new publications available from General Electric Co., Schenectady, N. Y.

**Flotation**—"Economic Advantages of Recovering Coal by Flotation" is the title of an engineering bulletin published by Denver Equipment Co., Denver 17, Colo. Low initial outlay and simple operation of both small and large coal flotation installations is described. The economical method of recovering coal fines already above ground at a cost from 20 to 50¢ per ton is another feature.

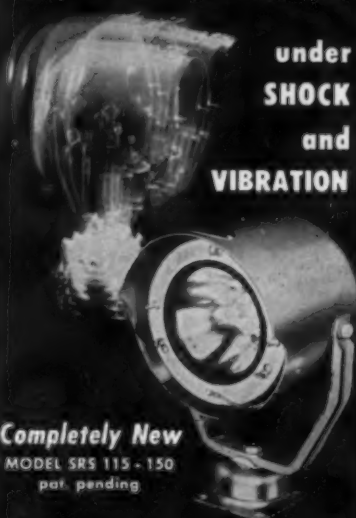
**Hose Fittings**—LE-HI Bulletin 198, Hose Accessories Co., Philadelphia 32, illustrates and describes in detail air, spray and welding-hose fittings.

**Disc Filters**—"The American Filter," an 8-p 2-color bulletin by Dorr-Oliver Inc., Stamford, Conn., describes the design, operation and advantages of this disc-type filter presently available with choice of air lift or paddle-type agitation or nonagitated tank and said to provide maximum filtration per square foot of floor space. Ask for Bulletin 7202.

**High-Voltage Tool**—S&C Electric Co., 4435 N. Ravenswood Ave., Chicago 40, offers Bulletin 823 illustrating and describing the function and construction of 15 basic high-voltage tools, (2,500 V and above) including a selector guide for power fuses, cutouts, switches and load interrupters.

**Packaged Oil Systems**—New Trabon

## NEVER BEFORE A LIGHT THAT LASTS SO LONG



under  
**SHOCK**  
and  
**VIBRATION**

Completely New  
MODEL SRS 115 - 150  
pat. pending

*Super Rough Service*  
**STURDILITE®**  
**FLOODLIGHT**

**A radically new concept  
in heavy duty lighting**

- ★ Free-floating, Diaphragm-action Lamp Suspension at the lens end!
- ★ Multi-plane Resilient Base Mount
- ★ Synchro-Harmonic Filament-Fixture Positioning for low, low relamping cost.
- ★ Integrated Socket-clamp. Eliminates screw-socket problems.

In hundreds of scientific laboratory tests, the combination of revolutionary new components and lamp in Model SRS 115-150 averaged 6000 times longer lamp life than former floodlights. From a few days to months in field tests—that's the amazing record of extended lamp life of this STURDILITE over conventional lights.

**MERRITT-CHAPMAN & SCOTT**  
uses STURDILITES on the  
**3 BIGGEST CONSTRUCTION JOBS  
IN AMERICA TODAY**

Glen Canyon Dam, Arizona	Niagara Power Project, N.Y.	Priest Rapids Dam, Washington
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High and low voltage models for all requirements in heavy construction, mining, quarrying, etc. Write for Literature.

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# This winter— speed your colliery operations



Use **Sterling Rock Salt** to keep your roads, platforms, walks clear and safe . . . to prevent frozen switches and scales. This powerful melting agent helps remove treacherous snow and ice *fast!* It eliminates costly delays around the mine, saves labor during critical cold-weather periods. Sterling Rock Salt is easy to handle and apply, is harmless to hands and clothing.

Give your customers "free-running" coal, too! Sterling Rock Salt prevents coal from freezing in transit, so it can be unloaded quickly and easily. (It takes only 5 lbs. of Sterling Rock Salt to protect one ton of bituminous; 5-8 lbs. for anthracite.) Customers will gladly pay the small premium for coal treated with Sterling Rock Salt! Comes in bulk carloads or packed in 100-lb. bags.

Free folder gives further information on Sterling Rock Salt for mines, collieries. Ask your Sterling representative or write to INTERNATIONAL SALT COMPANY, INC., DEPARTMENT CA-9, SCRANTON, PA.

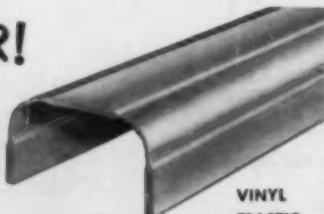
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INTERNATIONAL SALT COMPANY, INC.



**BRIGHT Yellow COLOR!**

**Guyan**  
VISI-GARD



Will Not Support Flame

**The Trolley Guard with BUILT-IN Safety!**

SHAPED RIGHT TO HANG RIGHT. Write for literature.

**GUYAN MACHINERY CO. LOGAN, WEST VIRGINIA**

## Equipment News (Continued)

**Bulletin 659**, Trabon Engineering Co., 28815 Aurora Rd., Solon, Ohio, illustrates and describes the compact "Meter-Mist" oil systems available in 12 space-saving packages for bearings and gears. Handy table helps in selecting the proper Meter-Mist lubricator and reclassified fittings.

**Rubber-Tired Tractors**—"Cut Your Tractor Costs With Big Rubber-Tired Tournatrator" is the title of a new 16-p 4-color bulletin (Form No. TD-280) describing the features, use and advantages of the 218-hp Model C Tournatrator. Tractor features, the company notes, include faster speed, greater mobility, fewer wearing parts and less maintenance. LeTourneau-Westinghouse Co., Peoria, Ill.

**Flexible Couplings**—Recently revised Bulletin 597, published by Chain Belt Co., Milwaukee 1, Wis., outlines what a flexible coupling should do and carries information on how to select Rex couplings, and illustrates installation and maintenance procedures.

**Rotating Unions**—New catalog illustrates design and use of rotating unions for water, steam and air, including charts and engineering drawings and instructions for installation and lubrication. Deublin Co., Northbrook, Ill.

**Bits**—Carbide-tipped bits for every type of mechanized mining are covered in a new catalog issued by the Vascoly-Ramet Corp., Waukegan, Ill., including complete dimensional data to assist in selecting the proper size and style. Ask for Catalog VR-488 on V-R Red Bits.

**Rotary Drill**—Davey Compressor Co., Kent, Ohio, has issued Bulletin Form E-7335 on the Model M-8TA tractor-mounted rotary air drill, rated at 600 ft with a 6-in drill and 3½-in drill pipe in fair to good sedimentary rock. Drill rig is mounted on a Caterpillar tractor.

**Remote Control**—The Femco "709" system for checking on and controlling fans and circuit breakers, including automatic power shutoff in case of fan failure, is described and explained in Bulletin 5902, Femco, Inc., Irwin, Pa.

**Mining Equipment**—"International Production Equipment for Modern Mining" is the title of new International Harvester Catalog CR-665-I covering International Drott underground mining Skid-Shovels, crawler tractors, Payhauler trucks and engines. International Harvester Co., Consumer Relations Dept., 180 N. Michigan Ave., Chicago 1. Also write the same department for Catalog CR-1076-I on loaders.

# PYROPRENE\*

\*Acceptance designation: "Fire Resistant, U.S.B.M. No. 28-7"

Always on the move . . . . .  
1,500,000 tons per year

Huge sharp-edged pieces ride over 1/2 mile on the Acme-Hamilton Pyroprene Belt which is running on a Barber-Greene conveyor. Over a million and a half tons of coal a year travel on this belt. Trouble is non-existent. Proof-positive that Acme-Hamilton belts haul top capacity loads for longer periods with no loss of time, or maintenance.

Fire Resistant Pyroprene Compound, used in Acme-Hamilton U.S.B.M. accepted belts, will not feed or spread fire. The cover is Pyroprene; fabric plies and breaker fabric are sealed with Pyroprene before the belt is built. Cover has exceptional resistance to cutting, abrasion and gouging. Write Acme-Hamilton, Dept. CA-92.

**Acme  Hamilton**

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

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MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE





# Among The Manufacturers

A. W. Fasold has been appointed assistant general sales manager of Hewitt-Robins, Inc.

He will assist in policy planning and administration of the company's nationwide sales and engineering organization responsible for marketing Hewitt-Robins belt conveyors, industrial rubber products, power transmission equipment and vibrating machinery.

Koehring Co., heavy equipment manu-

facturer, acquired the complete business of Shawnee Mfg. Co., Inc.

Shawnee makes backhoes, loaders, brooms, scrapers, blades and other attachments for wheel-type tractors.

Radio Corp. of America appointed Klaus Radio & Electric Co., Peoria, Ill., a representative for RCA's communications equipment.

The firm will handle sales of such two-way radio as the "Carfone."

Diamond Power Specialty Corp. has named sales engineering representatives for its Diamond closed-circuit television systems.

West Penn Controls Co. will handle western Pennsylvania and eastern West Virginia, and Col-Mer Co. will handle the central Ohio area.

D. K. Heiple has been named manager of a newly formed Sales Development Dept. at LeTourneau - Westinghouse Co.



D. K. Heiple

The new department is designed to keep pace with the firm's growth and the overall expansion of the earthmoving, grading and heavy hauling equipment manufacturing industry, according to the announcement. Mr. Heiple, with L-W for 17 yr, was selected because of his broad background in product application and design as well as leadership ability, declared LeTourneau.

Edwin T. Goree has been chosen vice president in charge of sales for the Koehring Div. of Koehring Co.



E. T. Goree

Before joining Koehring, Mr. Goree was sales manager of commercial cranes and excavators for Bucyrus-Erie Co., with whom he had been associated for 12 yr. During that period he also served as assistant general sales manager, assistant sales manager for small machines and export sales representative.

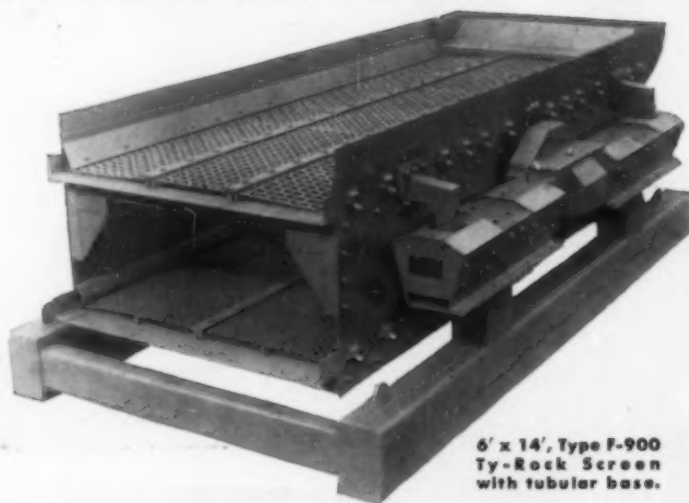
J. E. Chadwick has been appointed to head a new department of Koehring Co. to integrate sales to national and fleet buyers, it has been announced.



J. E. Chadwick

The new department will be a part of Koehring's central office marketing activities. Mr. Chadwick, as marketing manager, national accounts, will coordinate the relationship between national and fleet users of Koehring products and the sales activities of the 10 divisions of Koehring Co. He has been with the firm 14 yr.

## TY-ROCK SCREENS



6' x 14', Type F-900 Ty-Rock Screen with tubular base.

## For TOP Performance

The balanced circle-throw action of the Ty-Rock plus the full-floating action on large shear type resilient rubbers enables this screen to separate material with unequalled speed and effectiveness.

The Ty-Rock wastes no power in useless, harmful racking of buildings or supporting members. It delivers all of the intense power to the job of stratifying and separating the sizes.

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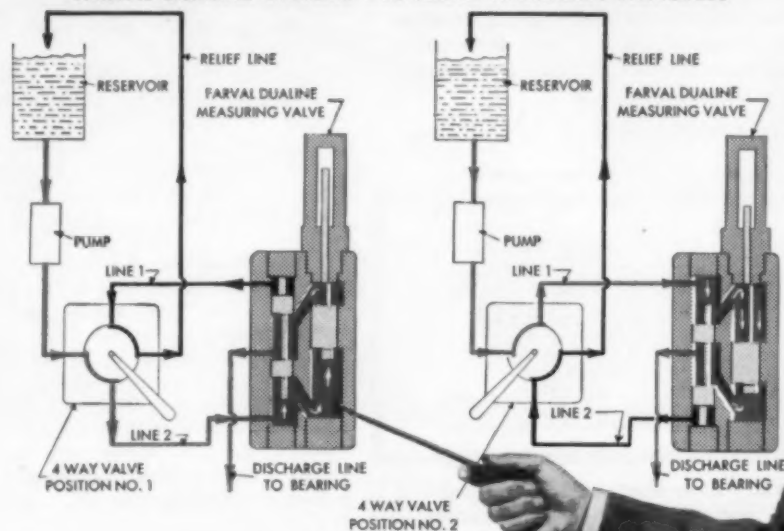
**THE W. S. TYLER COMPANY**  
CLEVELAND 14, OHIO

Manufacturers of Woven Wire Screens and Screening Machinery

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—Studies in  
Centralized  
Lubrication  
No. 246

*"For positive lubrication of large,  
medium and heavy-duty installations  
... it's a Farval Dualine System!"*

**FARVAL DUALINE SYSTEMS USE SIMPLE HYDRAULIC PRINCIPLES**



*With Farval Dualine centralized lubricating systems you get  
the following distinct advantages over other type systems . . .*



(a) Much lower operating pressures with consequently less danger of soap separation on grease systems. Also, less danger of system damage due to high lubricant pressures.

(b) Large lubricant passages with no pinhole ports, ensures practically full pump pressure for every metering valve. This is one of the reasons why Farval Dualine systems operate on lower pressures — give less sieving and working of lubricants.

(c) Positive indication at each bearing — does not have to depend on the questionable action of a single indicator at the pump.

(d) Each metering valve individually adjustable for the requirements of the bearing it serves.

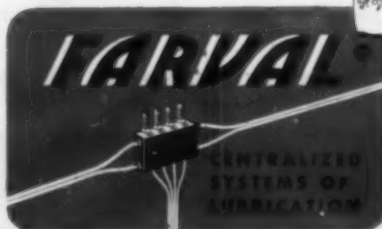
(e) Independent metering valve operation. Should trouble develop with one valve, the system will continue to operate. Only one bearing (not all the bearings) will require hand lubrication until trouble is corrected.

(f) True lubricant metering. Quantity of lubricant delivered to one bearing is not dependent on any other valve in the system.

(g) Much easier to spot and correct trouble.

Check with your Farval Representative and see how these versatile systems can improve production operations — reduce costs. Or write for free Bulletin 26-T containing complete engineering information on Farval Dualine systems. The Farval Corporation, 3288 East 80th Street, Cleveland 4, Ohio.

*Affiliate of The Cleveland Worm & Gear Company  
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# MR. ENGINEER:

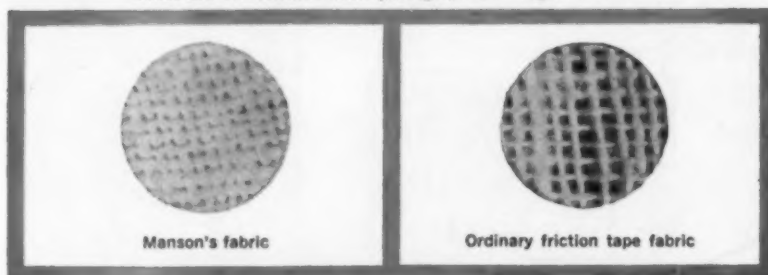
## which friction tape does *your* job best?

Of course, your first requirement in friction tape is physical protection. You want a tape that will take extreme abuse and still hold up. Then too, you want moderate electrical insulation and environmental protection. Lots of friction tapes do that fairly well.

Manson friction tape was developed specifically for use where ordinary friction tape won't do. It was designed for really rugged going. For example, a Manson splice forms itself into a solid mass of compound reinforced by layers of fabric. This is possible because Manson's compound fuses to itself. No adhesive coating is required to hold the tape wrappings together.

Compare Manson with ordinary friction tapes:

These are unretouched micro-photographs... magnified 20 times.



1. The fabric in Manson has 20% more fibers, and it is impregnated with a pure 100% natural rubber-base insulating compound.
2. Manson undergoes three impregnations or "frictionings" with its 100% natural rubber compound.



3. Ordinary friction tape has a "sticky" coating on one side. This adhesive holds the layers together. Manson has no adhesive coating. The layers of natural rubber fuse together into a tough, long-lasting wall of protection.

Manson's features mean nothing, of course, unless they can be translated into better performance and cost savings. That's exactly what Manson gives you. Ask anyone who has used Manson on the job.

Manson is made by Okonite — the company that makes superior electrical cables and the splicing tapes to go with them.

**THE OKONITE COMPANY**  
Subsidiary of Kennecott Copper Corporation  
Passaic, New Jersey

### Manufacturers (Continued)

Joy Mfg. Co. has appointed Kenton E. McElhattan product manager, miners and loaders, with headquarters in Joy's Franklin, Pa., plant.

He is responsible for the standard line of Joy Miners and loaders as well as Joy's new "pushbutton" miner. Named as Mr. McElhattan's assistant was John P. Mahaffey, former electrical design engineer for the continuous miner section and a 9-yr veteran with Joy. Also appointed were William G. Young, chief engineer and John C. O'Neil, product engineer, Continuous Miner Dept.

Joy Mfg. Co. has made new appointments in its Claremont, N. H., Product Dept.

E. C. Cooney was named manager, Hoist and Loader Dept., and B. J. Dickinson was appointed manager, Tungsten Carbide Bit Dept.

International Harvester Co. has made 4 new appointments in the Engine Sales Dept. R. R. McKiel, supervisor of manufacturer sales, has been named assistant manager; A. W. Meyer, 18 yr with the firm, has been named supervisor of manufacturers sales; N. G. Esbrook has been chosen supervisor of sales promotion; and L. E. Muzzy, with the firm since 1956, has been appointed supervisor of distributor sales.

Templeton, Kenly & Co., manufacturers of industrial lifting jacks and pullers, has named A. C. Templeton vice president, sales.

Kent J. Worthen has been appointed national sales manager for General Electric two-way radio.

Appointment of William C. Witt to the sales staff for mobile equipment hydraulic components is announced by Parker-Hannifin Corp.

Bucyrus-Erie announces the appointments of Charles B. Brockmeyer as sales engineer, dragline buckets and dippers, and Frank T. House, sales development manager.

Charles R. Gibbs was named director of service, Industries Group, for Allis-Chalmers Mfg. Co., succeeding C. B. Smith, who died July 6.

C. L. Cummins, founder of Cummins Engine Co., Inc., was recently honored at the Cummins factory in Columbus, Indiana, when he received his 40-yr service pin from Cummins president, R. E. Huthsteiner.

Peerless Supply Co., Des Moines, Iowa, has been named as a Carmet Mining Tool distributor by the Carmet Div. of Allegheny Ludlum Steel Corp.





# RED BITS



## it's the carbide that cuts!!

The best carbide pays off in better drilling performance . . .  
that's why V-R Red Bits cut faster and last longer than all others.

The superior carbide in V-R Red Bits is quality  
controlled from the ore to the finished product and backed by 29  
years of V-R carbide research and manufacturing experience.

Put these rugged bits to work in your mine for  
continuous trouble-free production. Quality carbide . . .  
plus engineering knowledge . . . plus complete V-R  
service add up to better cutting performance.

*The best mining bits are manufactured at V-R . .  
beginning with the manufacture of the carbide.*



Send for new  
Catalog VR-488  
for complete  
details.



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M-722

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Have you  
stopped  
learning?



One of the greatest of all British statesmen, it is said, read all of Gibbons' "Decline and Fall of the Roman Empire" in the time intervals of waiting for his wife to dress for dinner.

Once a busy man feels the urgency to learn — and to keep learning — it's remarkable how he somehow manages to find the time and place to do it.

Today, in business and industry, ignorance is the most extravagant bliss anyone can pretend to enjoy. And startlingly enough, it is only when a man really starts to read that he realizes how much there is to learn . . . how fantastically fast the world is moving . . . the supersonic speed of engineering and technology . . . and that just to keep pace with his present job, he must read regularly and well.

If he had to spend countless hours seeking out that which would be most useful in his work, the going might be rough. But, happily, this herculean task has already been accomplished . . . and conspicuously well by McGraw-Hill specialized magazines that span almost every field and function.

Your very own publication, for instance, that you are reading right now. Read it inquisitively. Read it imaginatively. Pass it along to your fellows, tell them how much you get out of it.

**Men who read more . . . earn more!**



JAW CRUSHERS



AGITATORS



DIAPHRAGM PUMPS

# DENVER

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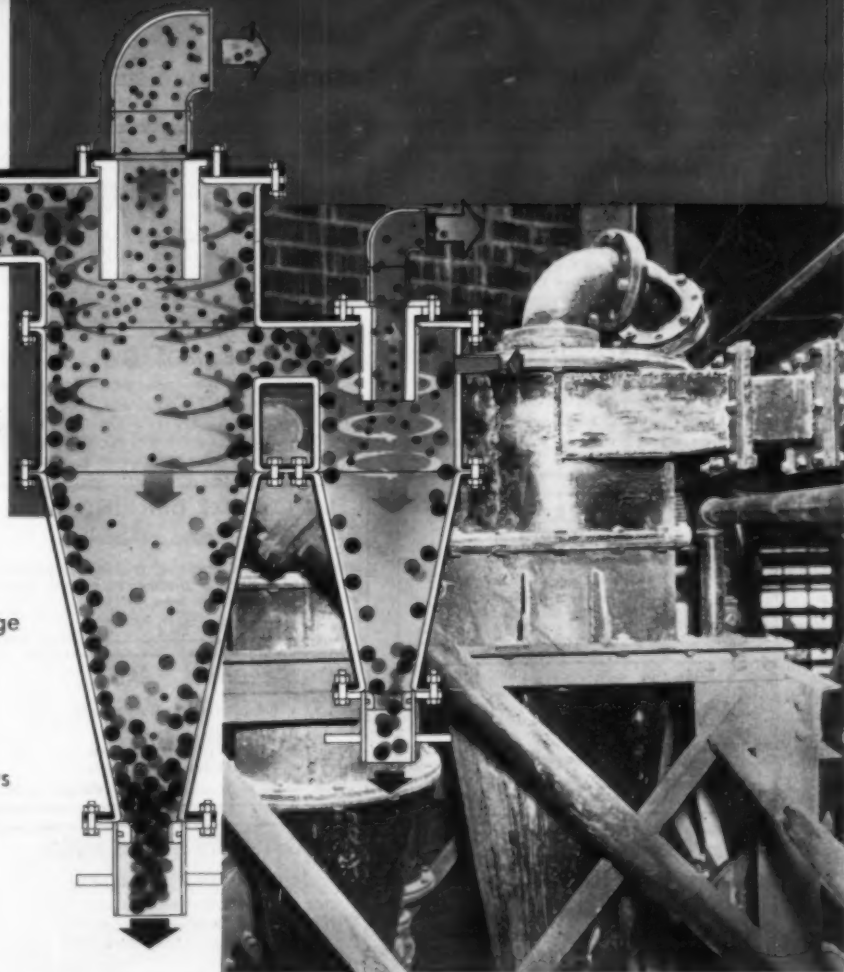
## MORTON DUPLEX\* CYCLONE CLASSIFIER

### Now!...

from DENVER...

a specially engineered DUPLEX  
Cyclone Classifier that—

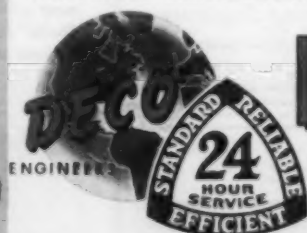
- (1) **Produces Cleaner, Higher  
Density Sand Product**  
than is possible with single-stage  
conventional wet cyclones.
- (2) **Is Self Regulating**  
—handles surges or peak flows  
that would plug conventional  
wet cyclones.
- (3) **Uses Water to Wash  
Slimes From Sand**  
to give sharp separation, clean,  
slime-free product.



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THE MAN WE MEAN IS A COMPOSITE of the editorial staff of this magazine. For, obviously, no one individual could ever accomplish such a vast business news job. It's the result of many qualified men of diversified and specialized talents.

AND, THERE'S ANOTHER SIDE TO THIS "COMPOSITE MAN," another complete news service which complements the editorial section of this magazine — the advertising pages. It's been said that in a business publication the editorial pages tell "how they do it" — "they" being all the industry's front line of innovators and improvers — and the advertising pages tell "with what." Each issue unfolds an industrial exposition before you — giving a ready panorama of up-to-date tools, materials, equipment.

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EMPLOYMENT • BUSINESS •

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Excellent opportunity for young graduate engineer with explosives or mining experience to join the Industrial Chemicals Division of Spencer Chemical Company. The person selected will sell and promote the sale of prilled ammonium nitrate for its use as a blasting agent. This is a permanent position offering considerable opportunity to advance with an expanding organization.

In reply, please send resume of experience, education, age and salary requirements to:

Personnel Manager  
Spencer Chemical Company  
610 Dwight Building  
Kansas City, Missouri

**MECHANICAL ENGINEER**  
with coal field experience

Midwest manufacturer of coal mining equipment has attractive position for graduate mechanical or mining engineer with several years of coal mine experience. Should be interested in the development of new machinery and methods and able to supervise department of 10 men engaged in development and specification work. Knowledge of manufacturing plant operations will be helpful. The man we are seeking is probably in the 30 to early 40 age group. In reply please send complete resume of education, experience and salary requirements. All replies held in strict confidence.

P-2397 COAL AGE

520 N. Michigan Ave., Chicago 11, Ill.

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Major bituminous coal producer has a permanent opening. Experienced on Coal preparation plants, mine buildings, and structures. Salary to \$10,000. Age range 35 to 55.

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Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

**MASTER MECHANIC**

(British Guiana)

U. S. aluminum producer has opportunity for competent man to supervise electrical and mechanical maintenance. Must be familiar maintenance and repair open pit mining equipment, Diesel electric generators, electrical distribution systems, etc. Previous overseas mining experience helpful but not essential. Prefer married man with no family. In letter give complete details on age, education, and experience including types of equipment handled. Box No. P-2306. Coal Age Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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FROM FOSTER"**



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& ALL TRACK EQUIPMENT  
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PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7  
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**FOR SALE**

800 Acres of No 6 Coal  
100 Ton Per Hr fast truck tippie near Uhrichville, Ohio  
2—4 Ton Jeffery gathering motors  
2—6 Ton Jeffery haulage motors  
2—100 K. W. Rotary Converters  
2 Standard Goodwin Cutting machines, 50 H. P. each  
250 H. P. Cummins engine with 150 K. W. Generator

Myrtle DeCorte  
435 St Clair Ave

Cadiz, Ohio, Phone 659

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TRANSFORMERS**  
NEW • REBUILT



**ELECTRIC EQUIPMENT CO.**  
WORLD'S LARGEST INVENTORY  
CALL COLLECT GL 3-6783  
P.O. BOX 51 • ROCHESTER 1, N. Y.

**WANTED**

Joy 14 BU and 8 BU Loaders, 440 volt AC. Must be in first class operating condition. Please write giving all details as to price, location and serial numbers.

W-2406 COAL AGE

520 N. Michigan Ave., Chicago 11, Ill.

**WANTED****Contract Coal Stripper**

To strip and deliver to cars approximately 15,000 tons monthly. Will work on tonnage basis. Two mile haul to rail siding. Easy stripping conditions. Eastern Pennsylvania site. Contractor must have 10 yard stripping equipment or equal. Ten year contract available.

Box W-2268 Coal Age  
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**WANTED**

Wanted: Copy of 'Coal Miners Pocketbook,' McGraw-Hill Publishing Company, 1928 edition, in good condition. State price to W-2318, Coal Age, Class. Adv. Div., P.O. Box 12, New York 36, N.Y.

**BELT CONVEYOR**

24" Wide, 70 feet long,  
Rex Sterns idlers, good belt.

**CRUSHERS**

54" x 24" Traylor type AA Smooth Roll Crusher.

16" Gyratory (Allis Chalmers) Size 8-K Gates type.

36" x 16" Superiors (2) smooth Roll Crushers.

30" x 16" Traylor type "A" Smooth rolls.

Tyroc 4 x 10 single deck screen.

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P.O. Box 689 Weehawken, NJ UNion 4-1010  
P.O. Box 756 Reading, Pa. FRanklin 5-8474  
In NYC — Conel 6-6976

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One (1) 2400 Lima Diesel Powered Dragline with 130' Boom—5 cu yd. Bucket—Serial No. 32435, Bucket purchased new 8 months ago. In good working condition and priced at \$45,000.00 for immediate delivery.

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Phone 8-0521



U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. \$35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or \$25.00 per mile.

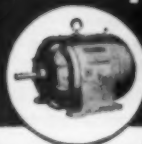
Write for free list on telephones. ALL shipments F.O.B. Simpson, Pa.

**TELEPHONE ENGINEERING CO.**  
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ON GUARANTEED  
NEW and Rebuilt  
MOTORS!

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**GUARANTEED REBUILT MOTORS**  
230 Volt DC Compound Wound  
Unless Otherwise Noted

HP	MAKE	TYPE	SPEED
100	West. S.B. Open	SK-142L	1800
100	West. S.B. Open	SK-170	900
75	West. S.B. Open	SK-140L	1800
75	West. S.B. Open	SK-160	900
45	G.E.S.B. Open, Shunt	RC-14	1200
40	Century S.B. Drip-New	DN-375	1800
40	West.S.S.B. Open, Shunt	SK-120L	1200
30	West. S.B. Open, Shunt	SK-113	1200
25	West. S.B. Open	SK-100L	1200
25	G.E.S.B. Shunt	CD-93	1200
15	G.E.S.B. Splash	CD-45	1800
10	West. S.B. Drip	SK-43	1800
10	West. S.B. Drip	CSP-324	1800
7 1/2	G.E. T.E.F.C. S.B.	NewB-284	1800
5	L.A.S.B. Drip	OGNA-254	1800

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Cash for your surplus new &  
used electric equipment.  
Send your list today.

Large line of motors, control equipment, AC  
& DC Generators, MG sets and transformers.

Phone or Wire Us Collect



**POWER EQUIPMENT CO.**  
8 Cairn St., Rochester 2, N. Y.  
Phone BEverly 5-1682

### FOR SALE

#### LOCOMOTIVE CRANE

30 TON BROWNING, STEAM, w/90 FT BOOM, OUT-  
RIGGERS, 8 WHEELS, STA. GAUGE.  
SLIP RING MOTOR

300 HP, G.E. TYPE 1-17B, FORM M, 3 PH. 60 CYC.  
2300 V. 600 RPM, w/DRUM CONTROLLER AND GRIDS.  
PULVERIZERS

2-JEFFREY, TYPE 82, 24" X 20" SWING HAMMER.  
LATE MODEL

ALL ARE IN GOOD CONDITION.

DALTON SUPPLY CO. BOX 366, DALTON, PA.

### 20# - 30# - 40# NEW RAIL IN STOCK

LEFTON INDUSTRIAL CORP.

Genl. Office: 212 Victor St.  
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### SALE OR RENT

1-1975 CFM Worthington DYC direct con-  
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3-25 & 45 Ton Diesel Electric Locomotives  
1-30 Ton Browning Diesel Locomotive Crane  
1-D17000 Caterpillar Power Unit

B. M. WEISS COMPANY  
Girard Trust Bldg. Philadelphia 2, Pa.

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1-Gardner-Denver Universal Wagon Drill, Model  
UWH, complete with Pneumatic Tired Wheels  
and Hydraulic Lift ..... \$2,950.00  
2-Muck Bias, 33 Cubic Yard capacity, with Air  
Operated Cut Off Gate ..... \$4,000.00 cash  
1-Farmer, Model E-SMS, Conveyor, 22 Ft.-  
Aluminum ..... \$600.00  
1-Farmer, Model E-SMS, 16" Wide x 20' Long,  
with Electric Motor, Serial No. 740 ..... \$1,050.00

2-Fairfield 20 Ft. Concrete Handling Belt Con-  
veyors with Air Motor and 8-10" Wheels-  
-24 Gauge ..... \$1,050.00 each  
13-Eimco 12-B Rocker Shovels-24" Gauge  
Track ..... \$2,750.00 each

120-Steel Muck Boxes-2 Cubic Yard Capacity  
..... \$75.00 each

120-Flat Steel Cars with Mayo Automatic Coupli-  
ngs ..... \$195.00 each

57-Steel Muck Type Cars, 2 C. Y. Mayo Side  
Dump with Mayo Automatic Couplers ..... \$435.00 each

8-Greensburg Monitor Storage Battery Locomo-  
tives with Westinghouse Heavy Duty Series  
Motor-24" Gauge ..... \$3,900.00 each

3-Atlas Battery Locomotives-3 Ton  
..... \$3,900.00 each

2-Mancha Battery Locomotives ..... \$1,500.00 each  
1-Wagner Mobile Mixer, Model M-7 ..... \$6,000.00

1-Rox 34E Dual Drum Paver Serial No.  
GG-155 ..... \$3,500.00

1-125 HP Pennsylvania Boiler Works Locomo-  
tive Boiler 60" Dia. x 22' Long ..... \$2,500.00

3-Ehrsam Electric Elevators 1w 80' Travel,  
Style 300-S with Towers ..... \$7,400.00 each

1-Elevator "Manlift" 16" Ehrsam Style B for 50'  
basic height, complete with 3 HP T.E.F.C.  
H.W. Drive, Automatic Belt Tension Device,  
Phase Reverse Relay and Class II Group 6  
Limit Switches ..... \$1,925.00  
With Manlift-62 additional feet of height  
..... \$480.00

3-Williams Lavatory Trailers-23 1/2' Long  
..... \$1,225.00 each

1-Bondactor Model 750 with accessories and  
A-925 Airplane Water Bomber & Pickup Pump  
..... \$1,125.25

2-International Model MU-35 Field Office Trailers  
with Drafting Tables, etc. .... \$1,890.00

1-Smithco Model 237 deluxe Field Office Trailer  
..... \$2,550.00

6-Hercules Titan Blasting Machines ..... \$160.00 ea.  
1-Buffalo Forge Blower Model 4 ..... \$275.00

2-Jay Fans, Series 1000 Asivans, Model 18-14,  
3450, 7 1/2" HP Motors to exhaust 2000 C.F.M.  
through 1800 feet of 12" pipe ..... \$600.00 ea.

3-Coppus Fans "Ventair" Type TM-6, 5 HP,  
3 Phase ..... \$500.00 ea.  
4-Atlas Copco Bit Grinders, Model L50-62  
..... \$275.00 ea.

**MOLE CONSTRUCTORS**  
FLEET STREET & TALBOT AVENUE  
RANKIN, PENNSYLVANIA  
Electric 1-1525

1-120U 9E Pig Boom or Standard  
3-400L Long Conveyor complete  
2-212AA Goodman Cutting Machine  
3-35L Jeffrey Cutting Machine

#### ROTARY CONVERTER

3-750 KW 600 volt 1200 RPM Westinghouse Serial  
Number over 8 Millions Fabricated Base

1-500 KW 600 Volt 1200 RPM Westinghouse  
3-500 KW Westinghouse 250/225 volt 1200 RPM

1-300 KW Westinghouse 1200 RPM  
2-300 KW G.E. HCC6 Form P 1200 RPM

2-200 KW G.E. HCC6 Form P 1200 RPM  
1-50 KW Westinghouse 1200 RPM

1-100 KW G.E. TCC6 Form P 1200 RPM  
2-100 KW Westinghouse 1200 RPM

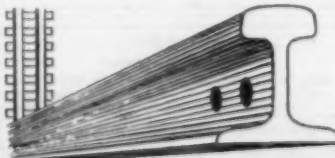
Transformers any voltage for above, switching  
gear, & panel boards

Mining machines, ITE circuit breaker, hoist,  
transformers and other items too numerous to  
mention.

J. M. ALLARA COMPANY

JAEGER, W. VA.

Phones: WELLS-6872 Shop, WELLS-62156 Night  
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### RELAYING • NEW RAILS TRACK MATERIALS

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612 DRYDEN STREET  
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### HEAVY EXCAVATION EQUIPMENT DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

15-W Bucyrus Erie Elec. Drag, 215', 13 yd.  
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9-W Bucyrus Erie Diesel Drag, 200', 9 yd.  
7400 Marion Elec. Drag, 175', 13 yd.  
7400 Marion Elec. Drag, 175', 12 yd.  
625 Page Diesel Drag, 150', 10 yd.  
621-S Page Diesel Drag, 125', 7 yd.  
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.  
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.  
2400 Lima Dragline, 130', 5 yd.  
4500 Manitowoc Drag, 120', 5 yd.  
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.  
111-M Marion Drag, 100', 4 yd.  
1601 Lima, 4 yd., Shovel/ Drag  
3500, 3500 & 3000 Manitowoc Cranes  
5560 Marion 26 yd. Elec. Shovel  
750-B Bucyrus Erie 20 yd. Elec. Shovel  
5480 Marion 18 yd. Elec. H. L. Shovel  
151-M Marion 7 yd. Elec. Shovel  
170-B Bucyrus Erie 6 1/2 yd. Elec. Shovel  
4161 Marion 6 yd. Elec. Shovel  
2400 Lima 4 1/2 yd. H. L. Shovel  
120-B Bucyrus Erie 4 yd. Elec. Shovel  
4500 Manitowoc 5 yd. H. L. Shovel  
111-M Marion Standard & H. L. Shovels  
3500 Manitowoc Standard & H. L. Shovels  
54-B Bucyrus Erie Standard & H. L. Shovels  
Large selection of smaller Shovels & Draglines  
Available

Model T-750 Reich, Truck Mounted Rotary and  
Down-the-Hole Drill  
McCarthy & Compton Coal Auger Drills  
Euclid trucks, truck cranes, dozers, scrapers, front  
end loaders, attachments and other misc. equip-  
ment available

### FRANK SWABB EQUIPMENT CO., INC.

313 Hazleton Nat'l Bank Bldg.  
Hazleton, Pa. GLadstone 5-3658

### FOR SALE:

#### 1 PREPARATION PLANT

13 ft 6 in. chance cone (floatation process) capacity  
350 tons per hour Acme Coal Washer located at  
Aveila, Pa.

Contact Penna Coal Company.

Mary Ann Buildings, Burgettstown, Pa.  
Phone WHitney 7-9565.

Two (2) each Joy Model CF312 Electric Hoists, 3 drum,  
with 40 H.P., 200 volt D.C. electric motors,  
4400# R.P. @ 300 F.P.M. Reconditioned.

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1132 South 4th West

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Phone EL 9-2021

### 7 yd. PAGE, walker perfect condition New Bucket

SERODINO, INC.

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VAley 1-3161

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THE IRONTON ENGINE COMPANY

STORAGE BATTERY — TROLLEY

FARMINGDALE, NEW JERSEY

(Formerly Ironton, Ohio, 1902-1950)

9 G.E. DIESEL LOCOMOTIVES  
23, 25, 45, 65, & 100 diesel elec.  
3-10 H.P. CAR PULLERS  
Link Belt 220/440 volt

JEFFERY COAL CRUSHERS  
3-24 x 24, 24 x 30, & 30 x 30

R. C. STANHOPE, INC.  
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can be found each week  
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## A.C. MINING EQUIPMENT FOR SALE

- 2-11BU-10APH Joy Loading Machines, 220/440 Volts A.C.
- 1-12BU-7G Joy Loading Machine, 220 Volts A.C. (can be changed to 440 Volts A.C.)
- 2-8BU-11G Joy Loading Machines, 220 Volts A.C. (can be changed to 440 Volts A.C.)
- 2-4JCM Joy Continuous Miners, 440 Volts A.C.
- 1-10RU Joy Cutting Machine, 220/440 Volts A.C.
- 3-512 Goodman Cutting Machines, 220/440 Volts A.C.
- 6-78 Sullivan Cutting Machines, 220/440 Volts A.C.
- 1-T-1 Joy Machine Truck, 220/440 Volts A.C.
- 1-T2-5 Joy Machine Truck, 220/440 Volts A.C.

## LOADING MACHINES FOR SALE

- 1-14BU-7RAE Joy Loading Machine, 250 Volts D.C.
- 4-11 BU-10APE Joy Loading Machines, 250 Volts D.C.
- 1-11 BU-11APE Joy Loading Machines, 250 Volts D.C.
- 3-14 BU-78E Joy Loading Machines, 250 Volts D.C.
- 2-14 BU-3PE Joy Loading Machines, 250 Volts D.C.
- 6-12 BU-9E Joy Loading Machines, 250 Volts D.C.
- 3-8 BU Joy Loading Machines, 250 Volts D.C.
- 3-7 BU Joy Loading Machines, 250 Volts D.C.
- 1-18-2 HR Joy Loading Machine, 250 Volts D.C.
- 1-645 Goodman Loading Mach. 250 Volts D.C.
- 2-Long 12" Piggyback Conveyors, each 300' long, complete with PT-12 Piggybacks and 12BU Joy Loading Machines.

## SHUTTLE CARS FOR SALE

- 2-570-48 Goodman Shuttle Cars, 250 Volts D.C.
- 2-65C-7E Joy Shuttle Cars, matched pair.
- 4-55C Joy Shuttle Cars, Matched Pair, Elevating Discharge, Disc Brakes, 250 Volts D.C.—Modern.
- 6-65C-5E Joy Shuttle Cars, Elevating Discharge, 4-Wheel Steering, 250 Volts D.C.
- 2-65C-3AE Joy Shuttle Cars, fixed elevated discharge, disc brakes, 34" high.
- 3-42E18 Joy Shuttle Cars, Disc Brakes, Elevating Discharge, Completely Modern, 250 Volts, D.C. 3-Standard, 1-Opposite Standard Drive.
- 1-Jeffrey Shuttle Car, 4-Wheel Drive and Steer.
- 5-32E16 Joy Shuttle Cars, Disc Brakes & Elevating Discharge.
- 4-105C-2E Joy Shuttle Cars.
- 3-105C-1E Joy Shuttle Car.
- 1-42E15A Joy Shuttle Car.
- 1-32 E-7 Joy Shuttle Car.

## CUTTING MACHINES FOR SALE

- 1-512 CJ Goodman Cutting Machine, 50 H.P. with bugduster.
- 1-11RU Joy Cutting Machine, 250 Volts D.C. with 8" Cincinnati Bar, Chain and bugduster.
- 2-10RU Joy Cutting Machines, 250 Volt D.C. with bugduster.
- 2-29UC Jeffrey Universal Cutters, Permissible, 250 Volts D.C.
- 1-512 CCH Goodman Cutting Machine, 250 Volts D.C.
- 5-35B Jeffrey Cutting Machines, 250 Volts D.C.
- 6-35BB Jeffrey Cutting Machines, 250 Volts D.C.
- 2-512DA Goodman Cutting Machines, 250 Volts D.C.

- 2-7AU Sullivan Cutting Machines, 250 Volts D.C.
- 1-124AA Goodman Slabber with One Lot of New Parts.
- 3-212 AB Goodman Machines.
- 2-412 AA Goodman Machines.
- 1-35L Jeffrey Machines 35 H.P.

## CONTINUOUS MINERS FOR SALE

- 3-4JCM Joy Continuous Miners, 440 Volts A.C.

## RECTIFIERS FOR SALE

- 1-300 KW Westinghouse Sealed Ignitron Mercury Arc Rectifier, 7200/12470 Volts, 3 phase, 60 cycle primary and 275 Volts D.C. secondary. Complete with switching equipment and associated controls. Latest type, like new.
- 1-300 KW Westinghouse Three-Car Portable Rectifier, 7200/13000 Volts, 3 phase, 60 cycle primary and 275 Volts DC secondary.

## ROTARY CONVERTER FOR SALE

- 1-150 KW Rotary Converter, Serial No. 1054562, with 150 KVA transformer and panel boards.

## COAL DRILLS FOR SALE

- 25-CP-472 Electric Coal Drills, 250 Volts D.C.
- 5-CP-572 Coal Drills.

## CRUSHERS FOR SALE

- 2-Scottdale 18" x 30" Double Roll Crushers. Like New.
- 1-36" x 36" Double Roll McLanahan Stone Crusher, complete with 100 H.P. Motor.
- 1-24" x 42" McNally Pittsburg Single Roll Crusher.

## ROOF BOLTING MACHINES FOR SALE

- 2-Fletcher Roof Bolting Machines, Rubber Tired, Self-propelled.

## COMPRESSORS FOR SALE

- 3-Acme Self-propelled Air Compressors, 83R, Model 168, Capacity 176CFM, with 40 H.P. Reliance Compound Motor. Excellent Condition.

## LOCOMOTIVES FOR SALE

- 1-15 Ton Goodman Locomotives, Anti-Friction, Contactors, Modern.
- 1-10 Ton Goodman Locomotive, Serial No. 4371—Type 32A04-T, 250 Volt D.C., 42" track gauge. Height 34".

## ROCK DUSTERS FOR SALE

- 1-MSA Track Mounted Rock Duster, 10 H.P., A.C. or D.C., high pressure, 30" high, any gauge.
- 2-MSA Bantam Rock Dusters, Rubber Tired, Portable.
- 2-MSA Bantam Rock Dusters, Skid Mounted.
- 1-American Mine Door, Wheel mounted bantam type rock duster, 250 Volts D.C., 22" high.

## HOISTS FOR SALE

- 10-211½ Vulcan-Danver Material Hoists, Complete with 3 H.P. D.C. Compound Wound 1750 RPM General Electric Motor.
- 2-Brownie Hoists, Model HKL—Good condition.
- 1-Brownie Hoist, Model HKM—Good condition.

## ELEVATORS FOR SALE

- 1-PL11-14 Joy Elevator.
- 2-Joy PL11-16 Elevating Conveyors.

## MACHINE TRUCKS FOR SALE

- 1-Goodman Low Vein Tractor Truck.
- 4-T2-SAPE Joy Trucks, 250 Volts D.C. Permissible.

## CHAIN CONVEYORS FOR SALE

- 5-61AM Jeffrey Chain Conveyors, 10 H.P. 300' long.
- 3-61HG Jeffrey Chain Conveyors, 5 H.P. 40' long.

## DIESEL PLANTS FOR SALE

- 1-60 KW, G.M. Diesel Generator Set, with 60 KW, 250 Volt D.C. Delco Generator.
- 1-100 KW Waukesha Diesel Generator with 220/440 Volts D.C.
- 1-100 KW Diesel Generator Unit, with G.M. Diesel Engine and 100 KW Generator.
- 1-D13000 Caterpillar Diesel Generator Unit—with Caterpillar engine and 75 KVA G.E. generator self-regulating, 220 Volt A.C.
- 1-250 KW Diesel Generating Plant, consisting of Westinghouse 250 KW 275 Volt Compound Wound Generator driven by Twin 6110 General Motors Engines. Complete with switchgear and all appurtenances. New in 1956.

## MOTOR GENERATORS FOR SALE

- 1-50 KW Westinghouse MG Set, 440 Volt AC, 250 Volt DC.
- 1-300KW Westinghouse Motor Generator Set, synchronous motor, 433 KW Output, 435 KVA, 2200 Volts, 1200 RPM. D.C. generator 300 KW, 275 Volts, 1200 RPM. Compound Wound. Complete with D.C. panel and switch gear.
- 3-50 KW G.E. and Westinghouse Motor Generator Sets, 2200 Volts A.C., 275 Volts D.C. Complete with switching gear.
- 1-200 KW Ridgeway Motor Generator Set, Complete with manual breakers, A.C. and D.C. Switchgear 2300/4000 Volts A.C. and 275 Volts D.C.
- 1-200 KW Ridgeway Motor Generator Set, Complete with switchgear and 1600 amp. 1-T-E automatic circuit breaker, 2300 A.C., 275 Volts D.C.

## BELT CONVEYORS FOR SALE

- 1-Goodman 99-5-GT-36 Tandem, 36" wide Belt, head and tail complete with 40 H.P. drive.
- 2 only 1200' 26" Belt Conveyors with 30 H.P. 250 Volt D.C. Drives.

## MISCELLANEOUS FOR SALE

- 1-PL 11-14 Joy Elevator.
- 10-Goodman 512 Cutter Bars and Chains.
- 220-AC&F 42" Gauge, 48" high Drop Bottom Mine Cars. Condition like new.
- 1-24" Fan with drive.
- 2-7½ H.P. Tricycle Type Rubber Tired Mine Tractors, 7½ H.P. 220 Volt Single Phase Motors or 250 Volt D.C. Motors.
- 3-24 J Motors, 7½ H.P., 250 Volt D.C.
- 4-902, 250 Volts DC Westinghouse Motor Units, only.
- 1-RSE Jeffrey Reel and Motor, complete.

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- 1-42E Joy Shuttle Cars
- 6-32E Joy Shuttle Cars
- 1-32D Joy Shuttle Car
- 3-14BU-3PE Joy Loaders
- 1-14BU-7BE Joy Loader, Rebuilt
- 1-14BU-2E Joy Loaders, 28" O.H.
- 4-12BU-9E & 7E Joy Loaders
- 4-8BU Joy Loaders, A.C. & D.C.
- 2-20BU-1-3E Joy Loaders
- 2-T1 Joy Cat Trucks, 220/440 V., A.C.
- 4-T2-2E & 2PE Joy Cat Trucks
- 7-PL11-7PE & 8PE Joy Elevators
- 1-CD25 Joy Coal Drill, Perfect
- 1-WK-80 Joy Compressor, 240 cu. ft., Rubber Mounted, Self-propelled, 30" O.H., Excellent
- 2-WL-62 Sullivan Compressors, 125 cu. ft., Rubber Mounted, Self-propelled
- 3-T12 Joy Supply Jumps (Battery)
- 1-Lot Joy Motors and Armatures—61, 103, 233, 241, 381, Etc.

## MISCELLANEOUS TRACKLESS EQUIPMENT

- 3-Long 98 Pig Loaders
- 1-360 Goodman Loader on Rubber
- 2-Myers Whaley #83 Loaders
- 1-Lee Nurse Jr. Continuous Miner
- 1-210 cu. ft. Acme Air Compressor
- 2-125 cu. ft. Acme Air Compressors
- 6-Manton Jumps w/81 Motors

## BELT CONVEYORS

- 1-45" x 963' Link Belt, Belt Conveyor, w/100 h.p. Drive
- 1,072'-36" 64A or B Jeffrey Belt Conveyor Structure
- 1,068'-36" Model "C" Joy Belt Conveyor Structure
- 3-36" Model "C" Joy Belt Conveyor Drives
- 1-30" x 2,580' Jeffrey 52B Belt Conveyor w/25 h.p. Tandem Drive
- 1-30" x 980' Goodman 97HC Belt Conveyor w/30 h.p. Tandem Drive
- 4-30" x 1,090' Goodman 99-5GT Belt Conveyors w/40 h.p. Tandem Drives
- 2-30" Goodman 98-5GT Tandem Belt Conveyor Drives 40 h.p.
- 2-30" Joy MTB Tandem Belt Conveyor Drives, 25 h.p.
- 2-30" Goodman 97HC Tandem Belt Conveyor Drives, 30 h.p.
- 1-36" Shop Constructed Belt Conveyor Drive, 15 h.p.
- 675'-30" Barber Greene Belt Conveyor Structure
- 2-28" Jeffrey 52B Belt Conveyors, 1,000' centers
- 1-28" x 10,000' Joy Model "D" Overland Belt Conveyor, Complete
- 1-28" x 2,450' Joy MTB Belt Conveyor, w/23 h.p. Tandem Drive
- 10,424'-26" Joy Model "D" Belt Conveyor Structure
- 18-26" Belt Conveyor Drives of various types
- 30-Tipple Belt Conveyors, various widths and lengths

## CHAIN &amp; SHAKER CONVEYORS

- 3-26" Joy Chain Conveyors, Permissible
- 4-15" Joy Chain Conveyors, Permissible
- 8-15" Long Chain Conveyors, 330' centers w/400 D.H. Long Mobile Head
- 1-15" Barber Greene Portable Chain Conveyor for unloading railroad cars
- 23-12" & 15" Jeffrey Chain Conveyors—61EW, 61NG, 61W and 61WM
- 1-12" Goodman 96L Chain Conveyor
- 2-PT12 Long Piggyback Conveyors
- 2-PT15 Long Piggyback Conveyors
- 6-PT15-B Long Piggybacks, 5 h.p. motors

- 62-Goodman Power Dumbbills and Dumbbill Hoists, Model 477B
- 47-Goodman 612 1/2, G15 and G20 Drives
- 7-Goodman 612 1/2 Shaker Conveyors w/10" 2 1/2" Pans
- 7-Joy Ladel UN Shaker Drives

## SUB STATIONS &amp; TRANSFORMERS

- 1-500KW G. E., MG Set
- 4-300KW MG Sets
- 2-200KW MG Sets
- 1-150KW G. E. Rotary Converter, w/Transformers
- 2-150KW Rotary Converters, Completely Automatic
- 15-150KW MG Sets of various makes and primary voltages
- 1-110KW Gen. Motor Diesel Generator Set, 275 V., D.C., 400 amp.
- 1-100KW Motor Generator Set
- 1-100KVA Gasoline Generator Unit
- 2-50KW MG Sets, 125 V., D.C., 1200 rpm
- 2-Armatures for 150 and 200KW Rotary
- 2-600 & 900 Auto Transformers
- 140-Transformers from 5KVA to 300KVA

## CUTTING MACHINES

- 1-824 Goodman Slabber
- 5-2AU Sullivans
- 5-7B Sullivans
- 17-11B Sullivans, 35 & 50 h.p.
- 15-12AB & 12AA Standard Goodmans
- 2-112AA Universal Goodmans
- 6-212AA Baby Goodmans, 250 Volt
- 3-12 Goodman Cutting Machines with Bugdusters
- 2-12 Goodman Cutting Machines, 250 V., D.C.
- 1-29U Jeffrey, 220/440 Volt, A.C., Rebuilt
- 3-35L Jeffrey Cutting Machines
- 50-31B and 32B Jeffrey, A.C. & D.C. Bugdusters and Trucks available

## LOCOMOTIVES

- 2-20 Ton MH77 Jeffreys, 42" L.G.
- 1-15 Ton MH82B G.E. Locomotive, 90 h.p. units, 44" O.H., 48" L.G., Excellent
- 6-13 Ton Locomotives, 250 V., any gauge
- 1-12Ton 29B Goodman Locomotive, 40" O.H.
- 6-10 Ton Locomotives, 250 Volt, any gauge
- 15-8 Ton Locomotives, 250 Volt, any gauge
- 6-7 Ton Atlas Battery Locomotives
- 1-6 Ton Battery Locomotive—NEW
- 27-6 Ton Locomotives, any gauge
- 5-6 Ton Jeffrey, MH150 Locomotives
- 14-6 Ton MH86 Jeffrey Locomotives
- 10-5 Ton Locomotives, 250 Volt
- 23-6 Ton Locomotives, 250 V., any gauge
- 1-4 Ton G. E. Battery Locomotive
- 2-4 Ton Mancha Battery Locomotives
- 10-62B Battery Locomotives Spare Armatures and Trucks for most of above Locomotives

## TIPPLE EQUIPMENT

- 1-4 Cell Jeffrey Baum Jig Washer, complete
- 1-CMI Coal Dryer, 48", Excellent
- 1-Heat Dryer, Complete
- 1-Marion Double Roll Primary Crusher
- 1-24" x 50" Pa. Single Roll Crusher
- 1-24" x 30" Link Belt Double Roll Crusher
- 2-24" x 24" Jeffrey Single Roll Crushers
- 1-18" x 12" Jeffrey Swing Hammer Pulverizer
- 1-4" x 12" Double Deck Vibrator
- 1-3" x 8" Low Head Vibrator
- 3-Jeffrey Tray Vibrator Feeders
- 4-Jeffrey Tray Vibrator Screens
- 1-Magnetic Separator, Complete
- 1-Set Jeffrey Dewatering Screens
- 3-Scraper Conveyors of various sizes
- 10-Tipple Belts from 15" to 42" width
- 1-30" x 42" Leading Boom
- 1-24" x 36" Leading Boom
- Air Valves, Blowers, Pumps, New Screens, Parts for CMI Dryers, Feed Reducers, Feeders, practically Jeffrey Baum Jig in parts and many other parts for Tipples

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- 121-38" L.G. Drop Bottom Cars
- 240-42" L.G. End Dump Cars, various makes
- 22-42" L.G. ACP 6 Ton Drop Bottom Cars
- 22-44" L.G. Drop Bottom Cars, 10 Ton
- 133-44" L.G. Drop Bottom Cars, various sizes
- 334-44" L.G. End Dump Cars, various sizes
- 305-48" L.G. & D. Drop Bottom Cars, 22" O.H.
- 2-58 1/2" L.G., 3 Ton, 4 Wheel Push Trucks

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- 478-Tons 30, 40, 56, 65 & 70 lb. Relaying Rail
- 1,863-1,000,000 CM Feeder Cable, Insulated
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- 681-300,000 CM Insulated Copper Feeder Wire
- 308-4-0 Stranded Insulated Copper
- 17,757-4-0 Trolley Wire
- 3,374-6-0 Trolley Wire
- 1,250-6 Section Trolley Wire
- 70,444-4-0 Stranded Highline Wire
- 17,051-2-0 Stranded Highline Wire
- 78,370-1-0 Solid Copper Trans. Line
- 42,926-22 Stranded Transmission Wire
- 9,333-6 Solid Copper Transmission Wire
- 3,980-4-0, 3 Cond. Neoprene Covered Cable
- 950-2-0, 3 Cond. Anhydrex & Lead Covered Cables

## MISCELLANEOUS

- 1-Canton Trunk Cleaner—Excellent
- 5-MKL Brown Fayro Car Spotters
- 11-CN Sullivan 5 h.p. Car Spotters
- 1-HKG Brownie Layer Loader Hoist
- 89-Hoists from 5 h.p. to 800 h.p.
- 6-Shop Constructed Jumps, track mounted
- 589-Stationary Motors—1/2 to 800 h.p. of various specifications
- 1-Prefab Building, 48' x 84'
- 1-Prefab Building, 14'8" x 16'
- 1-Prefab Building, 12' x 120'
- 107-Pumps from 5/8" to 4500 GPM of various specifications
- 1-10 h.p. Deming Deep Well Pump
- 1-350 GPM, 8" Puma Deep Well Pump
- 1-14" Centrifugal Slurry Pump, w/15 h.p. Motor
- 3,318-1/2" Galvanized Pipe
- 903'-1 1/2" Black Pipe
- 1,000'-2" Plastic Pipe
- 23,765'-2" Black Pipe
- 208'-3" Black Pipe
- 500'-2" Black Pipe
- 1-Rubber Vulcanizer, type 2
- 47-Room Blowers, Brown Fayro & Jeffrey
- 40-Mine Fans from 30" to 6' Hl Pressure
- 97-Coal Drills, 571CP, 572CP, 573CP, 473CP, A6 and A7
- 1-WK29 Sullivan Air Compressor 120 cu. ft. capacity, 48" L.G.
- 2-Controll Compressors, 120 cu. ft. capacity, 48" L.G.
- 15-Battery Chargers, various voltages
- 6-Cleveland Stokers
- 13-Scales for Mine Trucks
- 22-Air Compressors of various sizes
- 9-Rock Dusters up to 30 h.p., track and rubber mounted
- 988-Edison Lamps, Model P and R4
- 57-Auto Starters from 3 h.p. to 100 h.p.
- 1-Dust Collector for Roof Bolting
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- 3-Jay 14BU Loaders, low pedestal, 7AE.
- 2-Jay 14BU Loaders, medium pedestal, 7BEE.
- 4-Jay 14-BU 3PE Loaders
- 6-12BU10E Jay Loaders complete with Piggy-Backs.

- 2-Jay 12BU Loaders, 9E, latest type.
- 1-Jay 12BU Loader 220 UAC.
- 1-Jay 20BU Loader, latest type.
- 2-Jay 11BU Loader, latest type.
- 1-Jay 8BU Loader, 34" overall height.
- 2-Jay 8BU Loaders, 220 volt AC.
- 1-Jay curved Bar Head, complete.
- 6-Reliance 24-J Motors, 7 1/2 H.P.

- 20-9-J Motors, 4 H.P.
- 2-Goodman 660 Loaders on Crawlers 440 volt DC, like new.

- 1-Goodman 660 Loader on Crawlers, excellent 250 V. DC.
- 1-Goodman 665 Loader on Crawlers, latest type 250 V. DC.

- 1-Goodman 665 Loader, 26" hi. Rebuilt. 250 V. DC.
- 4-Jay 65C Shuttle Cars, rebuilt.

- 3-Jay 65C Shuttle Cars. Latest type.
- 1-Jay 55C Shuttle Cars, Excellent.
- 2-Jay 32E9 Shuttle Cars.

- 2-Jay 32E10 Shuttle Cars, rebuilt.
- 2-Jay 32E15 Shuttle Cars, rebuilt.
- 4-Jay 32E16 Shuttle Cars, rebuilt.

- 2-Jay 42E16 Shuttle Cars, rebuilt.
- 1-Jay CD-22 Drill, like new.
- 6-Jay T-2-5 low pan Crawler Trucks.

- 1-Jay T-2-6 low pan Crawler Truck with reel.
- 2-Jay T-1 Standard Crawler Trucks, 250 AC.
- 1-Jay T-1 Standard Crawler Trucks, 250 DC.

- 2-Goodman low pan Crawler Trucks, like new latest type.
- 4-Jay 11-B Cutting Machines, like new, 35 & 50 H.P.

- 1-Jay 7-B Cutting Machine, like new, 250 volt DC.
- 2-Goodman 212 Cutting Machines, 19" high.

- 4-Goodman 312 Cutting Machines, 17" high.
- 3-Goodman 412 Cutting Machines, 19" high.
- 1-Goodman Machine on Crawler, 31" high.

- All hydraulic.
- 6-Goodman 512 Machines with Bugdusters.
- 1-Goodman 512 Cutting Machine, perfect.

- 2-Goodman Hydraulic 512 Cutting Machines with Bugdusters.
- 1-Lee Norse low vein Machine Carrier on rubber.

- 1-Jeffrey 70 URB rubber tired Cutter, Universal head, perfect condition.
- 1-Jay 11RU Rubber Tired Cutters with bugdusters, Universal heads, like new. 250 V. DC.

- 2-Jay 10RU rubber tired cutters Universal head, 220, 440 volt AC, perfect.
- 6-7AU's on track Universal head.

- 2-Jeffrey 29UC Cutting Machines, Universal head, cuts anywhere in seam, 38" high, on Crawlers, 250 volt DC.
- 1-Jeffrey 29LC on Crawlers, rebuilt.

- 1-Goodman 6 ton, 91-A, 27" high, armor plate frame.
- 2-Jeffrey, 13 ton, type MH-110, 36", 42" and 44" ga.

- 2-Jeffrey, 10 ton, type MH-110, 42" and 44" ga.
- 2-Jeffrey 10 ton MH-78, 42" & 44" Ga.

- 2-Goodman 8-30 and 10-30 Locomotives, 26" above rail.
- 1-Jeffrey MH-124, 6 ton, 24" overall height.

- 12-Jeffrey, 6 ton, type MH-88, 42", 44" and 48" ga.
- 4-Jeffrey, 8 ton, type MH-100, 21 1/2" armor plate frames.

- 1-Jeffrey, 6 ton, type 21B6, 22" above rail.
- 3-Jeffrey, 10 ton, type MH-96, 42", 44" and 48" ga.

- 1-G.E., 4 ton, type 825 Locomotive, 22" high.
- 10-G.E., 6 ton, types 801, 803, 821 Locomotives, 42", 44" and 48" ga.

- 1-G.E., 8 ton, type 822 Locomotive, 44" ga.
- 3-G.E., 10 ton, type 809 Locomotives, 42", 44" and 48" ga.

- 2-Goodman, type 33, 6 ton, 44" and 48" ga.
- 3-Westinghouse, type 902, 4 ton, 42" and 48" ga.

- 2-Atlas Battery Locomotives, 36" Ga.
- 1-Atlas Trolley Locomotive, 4 ton, 24" high.

- 2-Westinghouse, type 904, 6 ton, 44" and 48" ga.
- 2-Westinghouse, type 906, 44" and 48" ga.

- 8-Jeffrey MH-78 Locomotive Units, cheap.
- 4-Jeffrey MH-88 Locomotive Units, real bar-gains.

- 6-Jeffrey MH-100 Locomotive Units, reasonable. Locomotive Trucks and Spare Armatures for all the above.
- 3-Plymouth Diesel Locomotives, 8 and 10 tons, 42" and 44" ga.

- 5-Complete Tipples, 3 to 5 track, steel and wood.
- 3-Cleaning Plants, 1 Ea. McNally, Roberts and Shaffer, Jeffrey, Washers and Air-Fluo Tables.

- 4-Complete Aerial Trams for coal or refuse.
- 3-Complete Rope and Button Lines.
- 2-Monitor Lines complete with Drums, excellent.

- 3-Allis-Chalmers 5' x 12' Low-Head Vibrators.
- 2-Allis-Chalmers 5' x 12' Rippflo Vibrators.

- 1-Allis Chalmers 4' x 12' Low-Head Vibrator.
- 1-Robins Gyrex Vibrator, 4 x 10.
- 10-Belt and Apron type Loading Booms.

- 6-Shaker Screens.
- 1-Robins Car Shakeout.
- 20-Crushers, various sizes.

- Feeders, Belt and Drag Conveyors, Car Retarders, etc.
- 2-Jay 10RU rubber tired cutters, Universal head, 220/440 volt A.C. Perfect.

- 1-Jay 11RU's, rubber tired, Cutter 250 V. DC.
- 1-Jeffrey 70 URB Cutter, rubber tired, Universal Head, low vein.

- 2-Jeffrey 29UC Universal Machines on Crawlers.
- 1-Goodman on Crawlers, 31" overall height.

- 3-Baby Goodman 212's, rebuilt, 250 volt DC.
- 2-Goodman 212 Cutting Machines, 19" high.

- 4-Goodman 312 Cutting Machines, 17" high.
- 3-Goodman 412 Cutting Machines, 19" high.

- 6-Goodman 512's, with Bugdusters, like new.
- 4-Goodman 512's, rebuilt, or as removed from service.

- 2-Goodman 512 hydraulic Cutters with bugdusters.
- 3-Goodman 512, 220/440 volt AC.

- 3-Goodman 112's, 220/440 volt AC.
- 1-Jay 7-B Cutting Machine, 250 volt DC.

- 4-Jay 11B Cutting Machines, rebuilt. 35 & 50 H.P.
- 10-Goodman 12AA's and 112AA's, 250 volt DC.

- 2-Goodman 324 Slabbers.
- 2-Goodman 724 Slabbers.

- 6-Jeffrey 35L's, like new, 17" high.
- 2-Jeffrey 35L's on low vein trucks.

- 15-Jeffrey 35B's and 35BB's.
- 2-Jeffrey 29B's on track.

- 2-Jeffrey 29C's, track mounted.
- 2-Jeffrey 29L's on track, perfect.

- 2-Jeffrey 29L's on Crawlers, Excellent.
- 3-Sullivan CE7, 220 volt AC.

- 2-Robins 35" tandem drives, with or without structure.
- 2-Jay 30" Underground Belt Conveyors, 500' to 2000' each. Excellent.

- 1-Goodman 97-C, 30" Conveyor, 1500' long.
- 3-Robins 30" Belt Conveyors, 200' to 2,000'.

- 4-Jeffrey 52-B, 30" Drive and Tail Assembly, complete.
- 2-Jay MTB 30" Drive and Tail Assembly complete.

- 3-Goodman 97 HC 30" Drive and Tail Assemblies, complete.
- 4,000' Conveyor Belt, 36".

- 8,000' Conveyor Belt, 30".
- 4,000' Conveyor Belt, 26", like new.

- 8-Jeffrey 61AM 12" Chain Conveyors, 300'.
- 2-61EW Elevating Conveyors.

- 2-61WH 15" Room Conveyors, 300'.
- 3-Jay 15" Room Conveyors, 300'.

- 2-Jay 20" Conveyors, 300'.
- 4-Jay Ladel UN-17 Shakers.

- 10-Goodman G-12's and G-15 Shakers.
- 3,000' Goodman 18" Flat Belt Conveyors, tandem drive, any length. Perfect.

- 2,500' Goodman 20" Flat Belt Conveyors, tandem drive, any length. Perfect.
- 2-100KW, G.E. TCC-6's, 275 volt, Rotary Converters.

- 1-150KW, G.E. HCC-6, 275 volt, Rotary Converter.
- 1-150KW, 6 phase, Allis-Chalmers Rotary Converter, 275 volt DC.

- 1-200KW Allis Chalmers Rotary Converter, 6 phase, 275 DC, perfect.
- 1-200KW, G.E. HCC-6 Rotary Converter, 275 volt DC. Newly rewound.

- 1-300KW, G.E. HCC-6 Rotary Converter, 275 volt DC.
- 2-300KW Westinghouse, 6 phase, Rotary Converters, 275 volt DC.

- 2-500KW Westinghouse Rotary Converters, 275 volt DC.
- 2-200KW Westinghouse Rotary Converters, 275 DC. Newly rewound.

- (All the above with 6900/13000 and/or 2300/4000 primary transformers).
- 2-150KW MG Sets, General Electric and Westinghouse.

- 1-200KW MG Set, Westinghouse, rebuilt.
- 1-200KW MG Set, General Electric, perfect.

- 2-150KW Allis-Chalmers MG Sets, 275 DC volt, excellent, 220/440 AC volt.
- 1-300KW Westinghouse, 600 volt MG Set, rebuilt.

- 2-300KW Westinghouse, 600 volt, 6 phase, Rotary Converters.
- 2-500KW Westinghouse, 600 volt, DC, 6 phase, Rotary Converters.

- 2-500KW HCC-6 Rotary Converters, 6 phase, 600 volt DC.
- 1-GMC-471 Diesel with 60KW, 250 volt DC Generator.

- 1-GMC-671 Diesel with 75KW, 250 volt DC Generator.
- 1-GMC-671 Diesel with 110 KW, 230 volt DC Gen.

- 1-Cummins 125 KW Diesel with 250 volt DC generator.
- 2-Goodman 660 Loaders on Crawlers, 440 volt DC, like new.

- 1-Allis-Chalmers Natural Gas Engine with 100KW Generator, 275 volt DC.
- Boilers, like new, 500 H.P.

- 6-Jay 12BU with Piggy-Back Conveyors.
- 16-Jay Loaders, 14BU, 12BU, 8BU, 11BU, 20BU.

- 2-Goodman 865 Loaders, 26", on cats.
- 1-Goodman 665 Loader, on Crawlers.
- 1-Goodman 660 Loader, on Crawlers.

- 1-Goodman 460, on track, Rebuilt.
- 2-Jeffrey 61 CLR's on rubber, 26".
- 3-Jeffrey L-500 Loaders.

- 2-Myers Whaley No. 3 Automatic Loaders.
- 2-Clarkson Loaders, 26" above rail.

- 5-Complete Tipples, 3 to 5 Track. Wood and Steel.
- 20-Jeffrey Malveyors on rubber tires.

- 1-34 Yard Shovel and Back-Hoe.
- 1-34 Yard Crawler Crane.
- Battery Supply Tractors, rubber tired.

- 1-Contrell Air Compressor on rubber tires.
- 10-Air Compressors, 1 H.P. to 40 H.P.

- 2-Jay self-propelled rubber tired compressors, 240 cu. ft.
- 2-Acme Self Propelled rubber tired compressors, 130 cu. ft.

- 40-Mine Pumps, all types.
- 1-Differential 40 Passenger Man-Trip Car.
- 6-MSA Rock Dusters.

- 2-Phillips Carriers, 44" and 48" ga.
- 1-Barber-Greene self-propelled Bucket Elevator.

- Pipe, Plastic, Steel, Transit, all sizes 1" to 6".
- 300-Mine Cars, drop bottom, 42" ga.

- 30-Mine Cars, drop bottom, 44" ga.
- 100-Mine Cars, 18" high, end dump, 44" ga.

- 300-Mine Cars, end dump and drop bottom, 20" high, 48" ga.
- 1-10 ton Mine Car Scale with Recorder.

- 15-Brown Payor HKL and HG Car Spotters.
- 1-12 ton Differential Slate Lorry.
- Incline Hoists, 25 to 50 H.P.

- 1-Jeffrey 5' Aerodyne Fan, like new.
- 1-Jeffrey 6' Aerodyne Fan.
- 1-Jeffrey 8' Aerodyne Fan.

- 2-Storage Tanks, 4,000 Gallons.
- 1-Storage Tank, 10,000 Gallons.

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LOGAN, W. VA.

PHONE PL 2-4400



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Haverly Bldg., Jackson 8-0951

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N. Michigan Ave., Mohawk 4-5800

Cleveland 13 ..... J. E. Lange, 55 Public Square  
Superior 1-7900

Dallas 1 ..... F. E. Holland, 1712 Commerce  
St., Riverside 7-3521

Denver 2 ..... F. W. Patton, Mile High  
Center 17, Broadway, Alpine 5-3981

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Bldg., 3615 Olive St., Jefferson 8-4967

San Francisco 4 ..... J. W. Otterson, 68 Post  
St., Douglas 2-4600

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Bldg., 35 Farringdon St., London E.C. 4,  
England

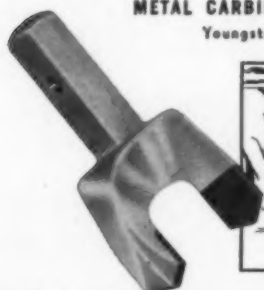
Michael R. Zepner, 85 Westendstrasse,  
Frankfurt/Main, Germany, Telephone 173035

## SUPERSET CORE BITS



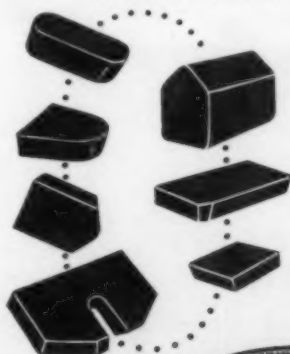
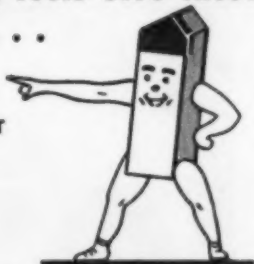
● Mining contractors, ore prospectors, coal operators and construction firms are realizing tremendous savings by taking advantage of our exclusive fabrication service! Contractors send us the necessary diamond stones from their own stocks—we hand set them in a super-hard tungsten carbide crown and braze to the threaded steel blank. Hand-set bits assure the proper positioning of each diamond stone to achieve maximum cutting efficiency. The carbide matrix holds the diamond stones until entirely used up. These advantages mean lower drilling costs to you. We can also supply complete core bits or salvage the stones from used bits at nominal cost. Supplied in standard sizes EX, EXE, AX, BX, NX, etc.

**METAL CARBIDES CORPORATION**  
Youngstown 12, Ohio



## Talide Tips for Mining Tools Give These 3 BIG ADVANTAGES . . .

1. EXTRA STRONG
2. SUPER HARD
3. SHOCK RESISTANT



● A complete line of low-cost, high-quality Talide Tips is offered fabricators and users for tipping machine bits, rock bits, drill bits, roof bits and open-pit bits. All Talide Tips have a special surface finish that facilitates brazing. Non-standard shapes and sizes quoted on request.



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HEAVY METAL • ALUMINUM OXIDE • HI-TEMP. ALLOYS  
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

COAL AGE • September, 1959

## LINATEX

LASTS LONGEST



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**LINE**  
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**LINATEX**

LINATEX HAS UNEQUALLED  
ABRASION RESISTANCE FOR:

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COLD BONDING PROCESS — JOB SITE APPLICATION

**LINATEX CORP. OF AMERICA**

P.O. DRAWER "D", STAFFORD SPRINGS, CONN.

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Most key mining officials  
read COAL AGE because it  
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Mining Company \_\_\_\_\_

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To Save Delay, Please Fill Out Completely

CA3310



This Cat No. 12 Motor Grader works 16 hours a day, 6 days a week, all year round for the Tecumseh Coal Corp., Boonville, Indiana. Its many jobs vary from cleaning up coal to grading haul roads.

## LOOK! THESE IMPROVEMENTS IN THE No. 12 PAY OFF IN EVEN HIGHER PRODUCTION!

■ Increased throat clearance ■ New blade, lift and circle ■ One-piece case for transmission and final drive ■ New, two-tooth power control clutches ■ New, positive mechanical lock

SINCE it was introduced twenty-one years ago, the Caterpillar No. 12 Motor Grader has earned the title "standard of the industry." Constant improvements have kept it the undisputed leader in its class. Here are the latest improvements that enable you to get even more work at lower cost with less maintenance from this high-production machine:

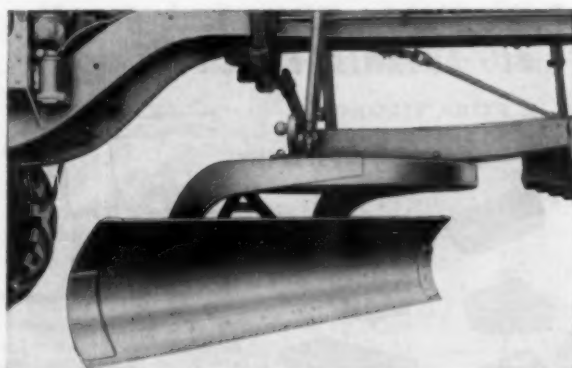
**1** Clearance between the top edge of the blade and bottom edge of the circle has been increased to 5 INCHES. This provides improved rolling action, allows more material to move across the blade for greater production.

**2** Blade thickness has been increased to  $\frac{7}{8}$  inch and blade beams have been increased in length and thickness to handle heavier loads. Lift arms have been lengthened and links shortened to enable operator to obtain all blade angles more easily. Circle reverse gear housing has been redesigned for better clearance as well as to increase the life of components and make service adjustments easier.

**3** There's a new, stronger one-piece case for the transmission and final drive. This eliminates possible leakage at gaskets. In addition, transmission bearings have been strengthened for longer gear life.

**4** New mechanical controls for reduced kickback, easier engagement. New power control clutches have two teeth, instead of four, and improved contact angles. They are more positive to engage, easier to hold in position.

**5** New blade controls feature a positive mechanical lock—exclusive with Caterpillar. When the control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.



See the improved No. 12 at your Caterpillar Dealer. Whatever the job, he has the right capacity motor grader for it. Besides the 115 HP No. 12, there's the big new 150 HP No. 14 and 75 HP No. 112. Ask for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# CATERPILLAR

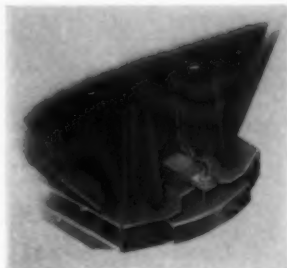
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**STEP UP  
PRODUCTION WITH  
THE IMPROVED No. 12**





**QCF DOUBLE-ACTION SPRING BUMPER**



**QCF WELDED END SILL MEMBER**



**QCF LUBRICATED DROP-BOTTOM DOORS**

## **QCF EXTRA-PERFORMANCE COMPONENTS** increase haulage efficiency

**QCF  
LOAD SUPPORT  
WHEELS**



Every **QCF** Constant Haulage Mine Car—drop-bottom, end dump, or rotary dump—pays off in extra productivity, lower maintenance costs. No matter what type or size your operations need, from 20 to 30 tons or more, there's a service-proved **QCF** design that's right for the job. Why not discuss your haulage problems with an experienced **QCF** representative. Just contact the nearest **QCF** sales office or write department CA-10.

*Write for this bulletin describing all types of **QCF** Mine Cars available on request.*



**qcf**  
**AMERICAN CAR AND FOUNDRY**  
DIVISION OF ACF INDUSTRIES, INCORPORATED  
750 THIRD AVENUE, NEW YORK 17, N. Y.

**MINE CARS FOR CONSTANT HAULAGE.**

SALES OFFICES: New York • Chicago • Cleveland • Washington, D. C. • Philadelphia • San Francisco • St. Louis • Berwick, Pa. • Huntington, W. Va.

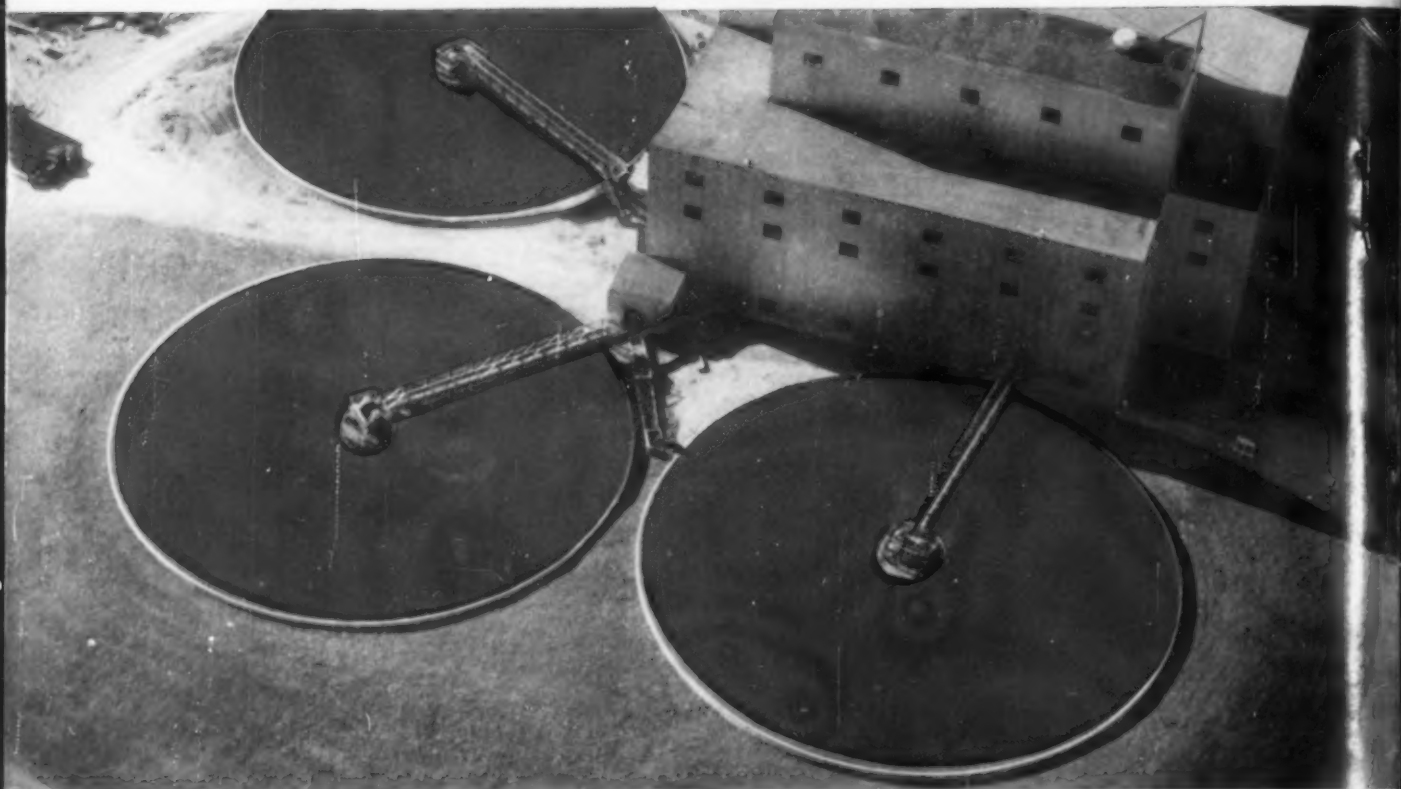
Besides recovering almost every last ounce of Moss Mine #3 coal, Link-Belt equipment makes possible a . . .

# repeat role for process water



## PREPARATION BY AUTOMATION

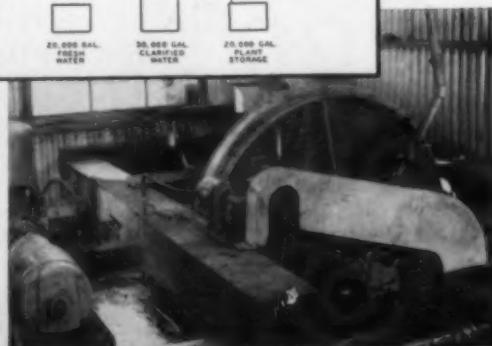
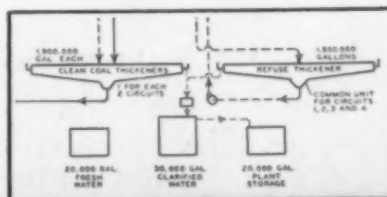
A Report on Clinchfield's Moss Mine #3



**I**N designing and installing the Moss #3 preparation plant for Clinchfield Coal Corporation, Link-Belt set out to make every bit of coal marketable. And it's been thoroughly done. Link-Belt thickeners not only salvage coal fines, they nip a stream pollution threat before it has a chance to bud. After recovery, coal is sent to vacuum filters . . . water is circulated for reuse.

Largely through efficient processing and conservation like this, Moss Mine #3 has been made highly profitable. The full story is told dramatically in our new film, "Preparation Makes the Product," available free for group showings. Please make arrangements with your Link-Belt office. And ask for Book 2655 describing our complete line of coal preparation equipment.

**REFUSE THICKENER** (center unit) and two clean coal thickeners—all 130-ft. diameter—recover fine particles and clarify water. Diagram below shows flow of process water. In bottom photo, Link-Belt revolving disc screen clears floating material from thickener effluent.



# LINK-BELT

COAL PREPARATION AND HANDLING EQUIPMENT

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